J. H. VAN DEVENTER
President and Editorial Director
C. S. BAUR
Vice-President & General Manager
H. E. LEONARD
Assistant General Manager
B. H. HAYES
Advertising Manager
O. L. JOHNSON, Manager
Reader Service and Market Research
R. E. BAUR, Production Manager
R. E. CLEARY, Technical Research and Promotion Manager

o o o

Executive Offices
Chestnut and 56th Sts.
Philadelphia 39, Pa., U.S.A.
Editorial and Advertising Offices
100 East 42nd St., New York 17, N.Y., U.S.A.

o o o

Regional Business Managers
C. H. OBER, New York 17, 100 East 42nd St.
H. E. LEONARD, New York 17, 100 East 42nd St.
ROBERT F. BLAIR, Cleveland 14, 1016 Guardian Bldg.
R. M. GIBBS, Pittsburgh 22, 428 Park Bldg.
B. L. HERMAN, Philadelphia 39, Chilton Bldg.
H. K. HOTTENSTEIN, Chicago 3, 1134 Otis Bldg.
PEIRCE LEWIS, Detroit 2, 7310 Woodward Ave.
D. C. WARREN, Hartford 1, Conn., P. O. Box 81
R. RAYMOND KAY, Los Angeles 28, 2420 Cheremoya Ave.

o o o

Owned and Published by
CHILTON COMPANY
(Incorporated)

OFFICERS AND DIRECTORS
C. A. MUSSELMAN, *Chairman*
JOS. S. HILDRETH, *President*
GEORGE H. GRIFFITHS, Vice-President
EVERIT B. TERHUNE, Vice-President
J. H. VAN DEVENTER, Vice-President
C. S. BAUR, Vice-President
P. M. FAHRENDORF, Vice-President
JULIAN CHASE, Vice-President
WILLIAM A. BARBER, Treasurer
JOHN BLAIR MOFFETT, Secretary
G. C. BUZBY, HARRY V. DUFFY
THOMAS L. KANE, CHARLES J. HEALE

o o o

WILLIAM H. VALLAR, Asst. Treas.

o o o

Chilton Editorial Board
PAUL WOOTON
Washington Representative

o o o

Member, Audit Bureau of Circulation

Member, Associated Business Papers

o o o

Indexed in the Industrial Arts Index. Published every Thursday. Subscription Price North America, South America and U. S. Possessions, $8; Foreign, $15 per year. Single Copy, 35 cents. Annual Review Number $2.00.

o o o

Cable Address, "Ironage" N. Y.

o o o

Copyright, 1945, by Chilton Company (Inc.)

This Week in The IRON AGE

Vol. 156, No. 26 December 27, 1945

Editorial

Out of the Frying Pan 37

o o o

Technical Articles

Fabricating High-Strength Aluminum Alloys 40
Shot Peening Effect on Aluminum 45
Early Aluminum Alloys 51
Automatic Roto Shaving for Fine Surfaces 56
Weldability Factors for 18-8 Stainless 58
New Equipment 62
The Quality of Terneplate 44
Finishing Spur Gears for Aircraft Engines 46

o o o

Features

Newsfront 39
Assembly Line 66
Washington 70
West Coast 74
European Letter 78
Personals and Obituaries 82
Dear Editor 84
This Industrial Week 86
News of Industry 89

o o o

News and Markets

Machine Tool Developments 100
Nonferrous Market News and Prices 102-3
Iron and Steel Scrap News and Prices 104-5
Comparison of Prices by Week and Year 106
Finished and Semifinished Steel Prices 108
Alloy Steel Prices 109
Fabricated Steel Products Prices 110
Warehouse Steel and Pig Iron Prices 111
Ferroalloy Prices 112
New Construction 113
Future of Metal Seen Important 116
Can Ceiling Set by OPA 118
Urges Creation of Patent Courts 122
Manpower Seen Problem to Agriculture 130
Plans Power Plant Project 134
Material Holders Free in Disposal Plans 134
Koppers Buys Company 135
Contract Terminations Reach $1.5 Million 136
Granite City Steel Drops Divided 136
Welding Suppliers' Group Formed 137
Mexican Foundrymen's Group Formed 138

o o o

Index to Advertisers 189-90

103 Christmases!

Forgive us if we reminisce a little, while we wish you the merriest Christmas possible, and the best of New Years. But our company was started in 1842, in a little two-story building in Chicago, and the Christmas Day just ahead will be our 103rd.

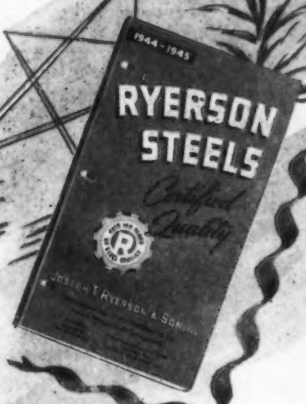
How much has happened since that first Christmas!

The raw little town of Chicago has grown into a metropolis only a day's journey from London by air. Four great wars have come and gone. The telephone has become an unnoticed convenience. The radio is almost always present—sometimes when we would rather it were not. Television is just about here.

Business tempos have speeded up immeasurably. Swift trucks hurry through streets where once horse-drawn drays leisurely carried our steel. Ladies' skirts which once swept the wooden sidewalks are—well, higher. The motor car has made the farmer almost a city dweller, so easy is it for him to go back and forth from his farm.

And now atomic power!

But if so much has changed in 103 years, the spirit of Christmas remains just what it was—cheery good will to all men everywhere. May this spirit continue with us in the years to come.



JOSEPH T. RYERSON & SON, INC.

Steel-Service Plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

RYERSON

The
IRON AGE

ESTABLISHED 1855

o o o

December 27, 1945

o o o

J. H. VAN DEVENTER
President and Editorial Director

C. S. BAUR
Vice-President and General Manager

o o o

Editorial Staff

Editor .....T. W. LIPPERT
News Markets Editor T. C. CAMPBELL
Machine Tool Editor...H. E. LINSLEY

o o o

Associate Editors

F. J. WINTERS
J. ALBIN
JOHN ANTHONY
S. H. BARMASEL
E. S. KOPECKI

Editorial Assistants

M. M. SCHIEN
H. W. VAN CAMP
C. R. MUNZER
J. P. O'CONNOR
E. L. SCHIMKO
E. A. TOWNE
A. J. SPEAR

Foreign Editors

Europe .....JACK R. HIGHT
Canada (Contrib.)...F. SANDERSON

Regional News and Technical Editors

T. E. LLOYD
Pittsburgh 22
428 Park Bldg.

C. T. POST
Chicago 3
1134 Otis Bldg.

L. W. MOFFETT
EUGENE HARDY
D. J. ANSBORO
Washington 4
National Press Bldg.

W. A. LLOYD
Cleveland 14
1016 Guardian Bldg.

S. H. BRAMS
Detroit 2
7310 Woodward Ave.

OSGOOD MURDOCK
WORTH HALE
San Francisco 3
1355 Market St.

Editorial Correspondents

ROBERT McINTOSH
Cincinnati

L. C. DEAN
Buffalo

G. FRAZAR
Boston

HUGH SHARP
Milwaukee

R. RAYMOND KAY
Los Angeles

JOHN C. McCUNE
Birmingham

ROY EDMONDS
St. Louis

JAMES DOUGLAS
Seattle

Out of the Frying Pan

AS we approach the end of 1945, it may be appropriate to give some thought to what has happened to America during the most eventful year in the world's history.

It has been a year of sorrow and rejoicing, of victory and defeat, of tremendous gains and enormous losses. But by and large, as we add the assets and the liabilities of 1945, some may think with considerable truth that we have stepped out of the frying pan into the fire. For example:

We have stopped fighting the Axis and started fighting each other at home.

Our scientists have performed a miracle that may result in blowing everybody into kingdom come.

We have become the world's leading financial power; hence, the world's leading lender without security.

We have expressed our graduation into internationalism by grabbing several foreign relations bulls by their tails and may not be able to let go of them for many years to come.

We have built up the greatest producing machine in the world, capable of filling innumerable wants, and are progressively hamstringing its operation in a quarrel over a division of its undetermined output which is becoming thereby progressively less.

In other words and to sum up, we have achieved the distinction of being the smartest idiots ever.

These are not cheerful year-end thoughts. But traditionally, since new resolutions are made on January first, this is the last chance in 1945 to consider our shortcomings.

What to do about it?

My suggestion is to make 1946 a year in which we pay particular attention to minding our own business.

Our business, the metal producing and metal working business, is to get busy and produce the largest possible quantity of the best possible products. We can't go wrong if we do that.

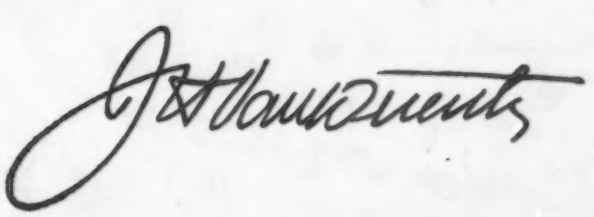
Doing that would solve the question of management-labor friction. If we all do what we can do, the results will certainly be enough to make it possible to satisfy all reasonable people. And the unreasonable ones couldn't be satisfied anyway.

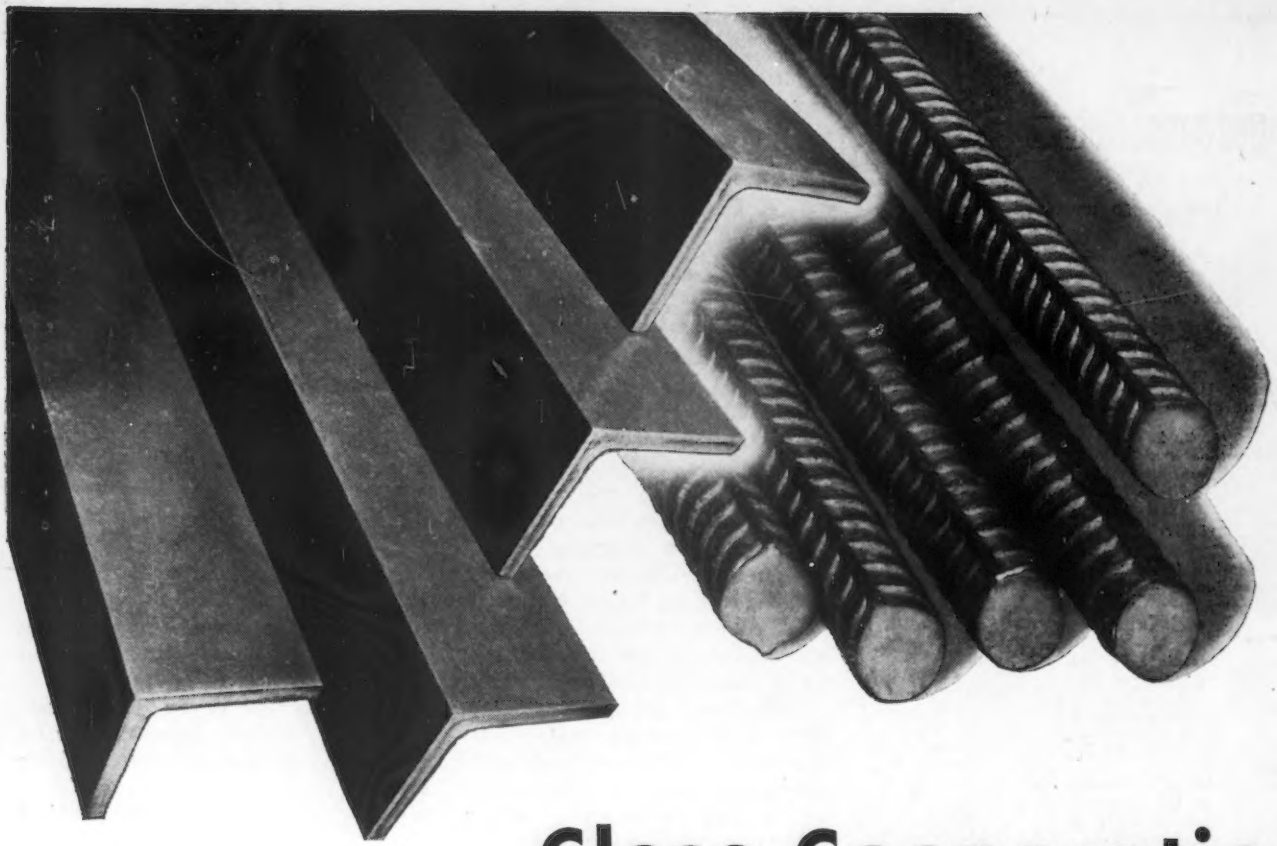
If we in our industry, and management and labor in other American industries do all that we are capable of doing, our country will be so well off that Uncle Sam can afford to play Santa Claus if he wants to and needs to and we want him to.

If we do that and the results, after they are known, are what they should be, we should be able to divide the proceeds in such a way as to make labor and stockholders happy, in so far as money is capable of making people happy.

Personally, I think that having work that one likes to do and congenial and comfortable surroundings in which to do it goes farther than money to make people happy, provided you have enough of the latter to make reasonable ends meet.

Minding our own business will bring us to that end much more quickly than trying to run everybody else's business, which is what most of us are doing today.





Close Cooperation *in* STEEL

INLAND HI-BOND* REINFORCING BARS

Provide the strongest known grip between steel and concrete. Important reasons for specifying HI-BOND are briefly:

1. Higher Bonding Strength
2. Greater Mechanical Grip
3. Higher Stress Transfer
4. Reduces Width of Cracks
5. Greater Resistance to Slip
6. Higher Design Stresses Possible
7. Conserves Material and Labor

* Trademark—Reg. U. S. Pat. Off.

In the early stages, when you start planning a job, it's well to keep in mind the useful service Inland can render. Through very broad contacts touching many fields, Inland's engineers and metallurgists have become familiar with practically every use and application of steel. They know what steels can do—also the shortcuts to smoother-going fabrication or production—to make jobs more profitable.

For many years, the building industry has turned to Inland for structural and reinforcing steel. From long experience they have learned to count on Inland's close cooperation.

No matter what your construction problem is—bring it to Inland—we'll work with you. Inland Steel Company, 38 South Dearborn Street, Chicago 3, Illinois. *Sales Offices:* Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul. *Principal Products:* Bars, Structurals, Plates, Sheets, Strip, Tin Plate, Floor Plate, Piling, Reinforcing Bars, Rails, Track Accessories.

INLAND STEEL

The IRON AGE
Dec. 25, 1945

NEWSFRONT

► Britain's wartime army of half a million steelworkers recruited 80,000 women and girls as crane drivers and laborers in scrapyards and steel plants.

► It may not be significant of the political color of the British Labor Government, but several programs of reconstruction and modernization that have been announced, including steel and railways, are identified as 5-year plans.

► During the war the Germans were able to substitute a phenolic resin-impregnated woven hemp internal bearing surface for ball bearings. They roughened the inside surface of a steel roller and held the hemp against it by inserting a snug-fitting aluminum rod. When heating to cure the resin, the differential expansion of the aluminum exercised the pressure needed to bind hemp to steel.

► The polymides plastics used for connecting belts on motor driven equipment in Germany during the war are reported to have lasted 10 times the life of leather belts.

The plastopals were used as baking and air-drying lacquers for coating tin cans, wires, railway cars and machinery.

► Polyvinyl hammers are used in place of lead, rubber or wood hammers in forming copper, aluminum and light metals in the automobile and aircraft industries. They are reported to have a much longer life, up to 10 times. They are made by placing sheets of 10-12 mm. thickness in a steam bath at 100°C. for 1 hour to produce a tacky condition, then placing them in a press for 24 hours.

► While immediate British auto production is in models identical to prewar cars, some small firms are redesigning their products completely. A typical example, the Jowett Javelin breaks away from conventional body design for airplane styling, and features a horizontally opposed four cylinder engine.

► Discarded military flamethrowers are now being used in the Louisiana sugar cane fields to burn out weeds growing between the rows of young cane. The operator's skill in handling this wartime innovation is measured by his ability to kill obnoxious growths without scorching the growing cane.

► Shot peening aluminum sand castings results in better corrosion resistance than sand blasting. Also shot peening obscures any small cracks or porosity on surface of casting.

► Recent comparison test of fully killed acid bessemer steel pipe and open-hearth pipe shows bessemer steel to have higher yield strength and tensile strength - however, elongation is slightly lower.

► New simple procedure for determining thickness and coating composition of terneplate has been worked out by the Tin Research Committee laboratories.

► A new machining process, called photo shaving, has been developed by the National Broach and Machine Co. for high quality finish.

► The Germans contemplated and designed a rocket propelled anti-bomber missile which had a maximum speed of 1700 mph at 100,000 ft. There were also designs and prototypes of a rocket guided by the infra-red rays emitted by bomber motors.

For photographic reconnaissance, they produced a powered glider intended for very high altitude operations.

► A striking similarity of production methods has been noted among German producers of tool and special steels. All manufactured products in the form of rolled and forged bars, cold drawn and ground bars, wire, plate and sheet. Practically all these steels were melted in electric furnaces, yet all producers had openhearth capacity for carbon and low alloy steel production.

► A new development which may take around 30,000 tons of magnesium annually is the cathodic protection of steel pipelines. Where they come into contact with earth or water, it is possible to slow up corrosion by diverting the electrical action from the pipeline to a magnesium anode buried in the ground.

. . . Fabricating High-Strength

. . . Precipitation hardening aluminum alloys which are replacing unaged 24S-T in new aircraft designs can be fabricated with a minimum of shop difficulties. Their mechanical properties, heat-treating operations, effects of cold work, as well as problems connected with forming, attachment, machinability and finishing are included in this article based on a paper presented before the SAE, Los Angeles, Oct. 4, 1945.

ALL the new high-strength aluminum alloys are alloys that are subjected to a precipitation or aging heat treatment, subsequent to the solution heat treatment, to develop their maximum mechanical properties. These alloys, in the aged condition, are characterized by relatively low elongations, reduced impact resistance, increased notch sensitivity, increased ultimate strength, and a yield strength that is much more nearly equal to the ultimate strength than is true with conventional unaged aluminum alloys.

The problem as presented before the research department of the Consolidated Vultee Aircraft Corp., San Diego, Calif., was how best to fabricate aircraft components from these alloys so as to take full advantage of the superior mechanical properties of these materials. As a result of this study the following shop fabrication procedures have received prominence:

(1) That in cases where design dictates the use of precipitation hardening aluminum alloys, the detail parts be formed, whenever practicable, in the as-quenched solution heat-treated condition.

(2) That the high-strength aluminum alloys not be joggled, dimpled, formed or reworked when in the precipitation hardened condition unless accurately controlled heated-tool methods are used.

These alloys, due to the chief alloying constituent used, divide naturally into two groups, the copper alloys consisting of 14S, 24S, and R301, and the zinc alloys consisting of 75S and R303. Each can be aged successfully by a variety of temperature-time aging cycles, but in general the zinc alloys respond best to a relatively low temperature, long-time aging cycles, whereas the copper alloys respond best to a relatively high temperature, short-time aging cycle. One of the important differences between these two groups is that the zinc alloys are not affected in their response to the aging heat treatment by the amount of cold work to which they have been subjected, whereas the mechanical properties of the copper alloys, in most cases, are greatly improved by cold work prior to the aging heat treatment.

The mechanical properties and rec-

TABLE I

Mechanical Properties and Recommended Aging Cycles for High-Strength Aluminum Alloys

Material		Aging Cycle			Mechanical Properties				Bearing Strength				Solution Heat Treat Temperature, °F
									1.5 in. Diameter		2.0 in. Diameter		
Designation	Form	Size	Temperature, °F	Time, Hr	Tension, Ultimate	Tension, Yield	Compression, Yield	Shear, Ultimate	Ultimate	Yield	Ultimate	Yield	
24S-T80 [1]	Clad sheet	0.064—	375	6½	60,000	47,000	47,000	39,000*	90,000	68,000	114,000	75,000	910-930
24S-T80 [1]	Clad sheet	0.063+	375	6½	62,000	49,000	49,000	41,000*	93,000	69,000	118,000	78,000	910-930
24S-T81	Clad sheet	0.064—	375	6½	64,000	57,000*	57,000*	40,000*	96,000	78,000	122,000	90,000	910-930
24S-T81	Clad sheet	0.063+	375	6½	67,000	59,000	59,000*	41,000*	100,000	83,000	127,000	94,000	910-930
24S-T86	Clad sheet	0.064—	375	6½	70,000*	68,000*	66,000*	42,000*	102,000	91,000	129,000	104,000	910-930
24S-T86	Clad sheet	0.063+	375	6½	72,000*	69,000*	69,000*	43,000*	106,000	95,000	135,000	109,000	910-930
R301-T [1]	Clad sheet	All	350	6	62,000	54,000	54,000						930-950
R301-T	Clad sheet	0.040—	350	6	63,000	56,000	56,000						930-950
R301-T	Clad sheet	0.039+	350	8	64,000	57,000	57,000						930-950
75S-T	Clad sheet	0.501—	250	23	75,000	64,000	64,000[2]	45,000	112,000	90,000	142,000	102,000	860-930
75S-T	Bare sheet	0.040—	250	23	76,000	65,000	65,000		114,000	91,000	144,000	104,000	860-930
75S-T	Bare sheet	0.039+	250	23	77,000	66,000	66,000		115,000	92,000	146,000	105,000	860-930
24S-T84	Shapes	0.064—	375	6½	67,000	63,000	64,000*	42,000*	100,000	88,000	127,000	101,000	910-930
24S-T84	Shapes	0.063+	375	6½	70,000	66,000	66,000*	43,000*	105,000	92,000	133,000	106,000	910-930
24S-T80 [3]	Extrusions	All	375	6½	65,000	50,000	50,000						910-930
75S-T	Extrusions	All	250	23	80,000	70,000	70,000	44,000	104,000	91,000	128,000	98,000	860-880
75S-T	Bar stock	[4]	250	23	78,000	66,000	66,000	43,000	101,000	87,000	125,000	94,000	860-930
14S-T	Forgings	All	360	8	65,000	50,000	50,000	40,000	96,000	70,000	124,000	80,000	930-950
75S-T [5]	Forgings	All	250	23	75,000	65,000	65,000						860-930

Notes: All values with grain. * Not approved by Navy and CAA; see ANC-5.

1. Material solution heat treated and aged by user.
2. Except that Army approved 62,000 psi for this value.
3. Not approved by Navy and CAA.
4. Values shown are for rectangles 2 x 10 in. or less, squares 2 x 2 in. or less, and rounds of 3 in. diam or less.
5. Not approved by Army and CAA.
6. Primary modulus is 10,500,000 psi. Where the material is clad, the secondary modulus is 9,500,000 psi. The modulus of rigidity is 3,900,000 psi. According to NACA TN966, U^2 is 0.10 in the case of 24S-T, and 0.11 in the case of 75S-T.
7. Thermal coefficients of expansion are: 24S, 0.000013; and 75S, 0.0000144.

Aluminum Alloys

By ROY A. MILLER
Chief Structural Research Engineer,
and
MAX E. TATMAN
Chief Metallurgist, Consolidated Vultee Aircraft Corp., San Diego, Calif.

ommended aging cycles for these alloys, more especially the great increase in yield strength, makes them very desirable for aircraft structures. As will be noted from table I and fig. 1, 75S-T has the best ultimate tensile and shear strengths of the various sheet materials, though 24S-T86 sheet has the best yield strength. Forgings, of course, should be of 75S-T wherever possible; otherwise they should be made of 14S-T.

Viewing the mechanical properties shown in table I, these are for the materials in the T or artificially aged condition and are attained immediately after cooling from the aging temperature. The properties in the W condition, i.e., after completion of the solution heat treatment and prior to the aging heat treatment, are also of interest. In fig. 2 are curves showing the values of the elongation, tensile yield and tensile ultimate strengths for 14S-W, 24S-W, and 75S-W. These data were obtained from 0.064 sheet and are typical values.

The bearing values shown in table I, it should be noted, are for the material in bearing on bolts or protruding head rivets, and may be used to determine the strength of joints not critical in shear of the bolt or rivet and not limited by crippling of the sheet adjacent to the hole, an occurrence with sheet that is relatively thin with respect to the diameter of the bolt or rivet. In determining the strength of the machine countersunk riveted joints, the effect of the head must also be considered. In fig. 3 is shown a typical curve of the strength of a riveted joint plotted in terms of the sheet thickness.

The impact strength of aluminum alloys is, in general, reduced by the precipitation heat treatment. This means, of course, that they are more sensitive to notch effects and to the rate of application of load in the aged than in the unaged condition. It is understood that the impact strength of 75S-T is somewhat better than that of the 24S-T8 series materials.

The relative merit of these materials with regard to fatigue resistance is not yet well established. The few data available indicate that aging tends to reduce slightly the endurance limit of the unaged material, but, in general, the overall endurance limit of these materials is not improved by the aging treatment and may be slightly reduced in some instances.

Heat Treatment and Cold Work

The recommended solution and precipitation heat-treatment cycles for these materials are shown in table I, except that the time at temperature for the solution heat treatment is not shown, as it is a function of, and increases with, the thickness or mass of the part. Reference should be made to the applicable specification for this information. The recommended solution heat-treat temperatures should be carefully adhered to but the precipitation or aging treatment may be accomplished by a variety of cycles. In the case of the copper alloys the time required to obtain maximum properties decreases with the increase in temperature though the practical low limit in the case of 24S is considered to be 355°F and the safe upper limit at 380°F. In fig. 4 are shown curves which illustrate the aging character-

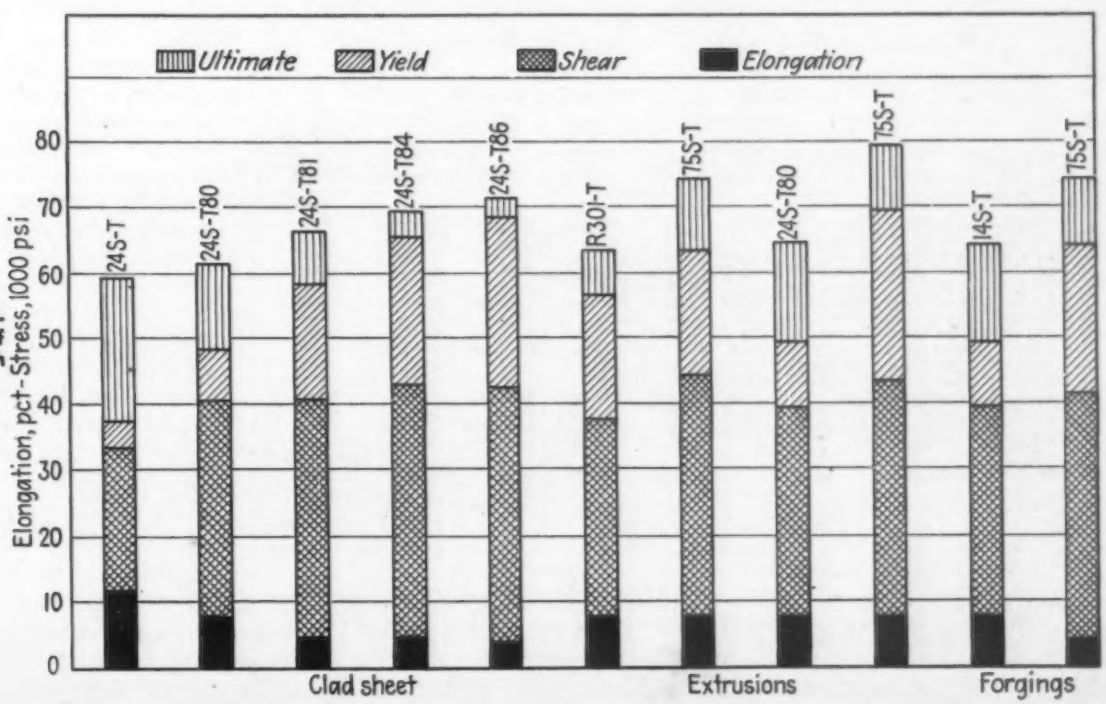


FIG. 1 — Mechanical properties of new high-strength aluminum alloys.

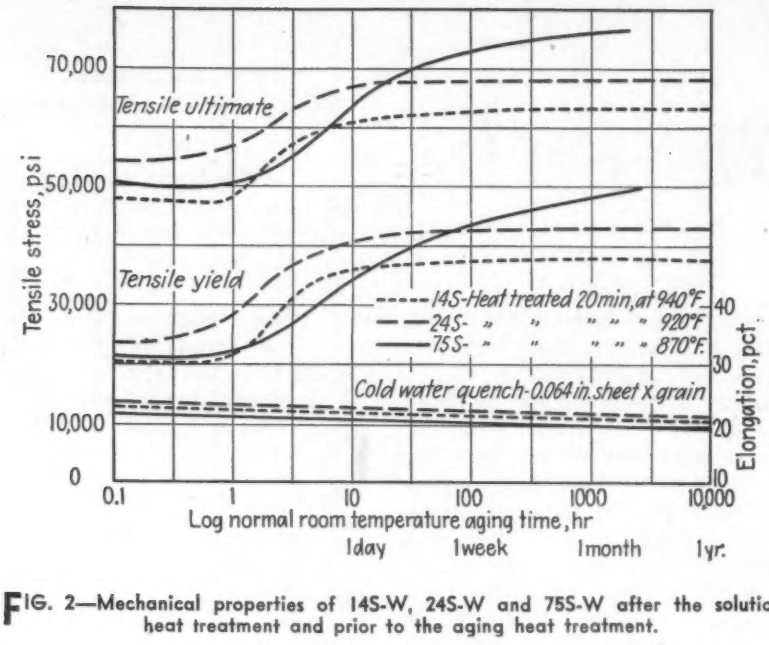


FIG. 2—Mechanical properties of 14S-W, 24S-W and 75S-W after the solution heat treatment and prior to the aging heat treatment.

istics of a typical duraluminum type alloy at several different temperatures. Although these curves actually represent 24S-RT material, the curves for the other tempers of 24S would be quite similar. The aging cycle shown for 14S and R301 in table I are recommended, and result in material that meets the specification requirements. However, data at hand indicate that the resultant mechanical properties of clad 14S-T sheet increase slightly as the aging cycle varies toward a lower temperature with a longer time. It would appear that 340°F for 11 hr might be the most practicable one for 14S, bare and clad, and for R301.

In the case of the alloys containing zinc, the recommended cycles give the best properties, but it appears that the time at temperature may be materially reduced without appreciable loss in strength. This may be seen readily from fig. 5 which shows the aging curves of R303-W at several temperatures, and also represent the trend for 75S-W material. It should be noted that aging these alloys above 275°F would be undesirable. Tests indicate that there is little difference between the interrupted and the progressive aging cycles.

Both the copper and zinc alloys are sensitive to the rate of cooling from the solution heat treatment, but are affected differently. Slow cooling has a marked tendency to reduce the corrosion resistance of the copper alloys and a lesser effect in reducing the strength. In the case of the zinc alloys it tends to reduce the strength and has little if any effect on the corrosion resistance.

Forming, joggling, dimpling, and reworking of materials are shop operations, but they also merit careful consideration by designers. The aging heat treatment greatly increases the yield strength so the amount of spring-back from forming and similar operations is greater, and greater loads and better tools are required to do the work. As shown for the materials in table I, it is recommended that these operations be performed on these materials in the unaged condition.

Considerable work is being done to develop a technique of very short time applications of elevated temperature to the material in the T condition just prior to the forming, joggling, or dimpling operation. Some of the experiments show promise and indicate that at 300°F the minimum bend radii shown in table II may be substantially reduced and without any appreciable reduction in mechanical properties. Until such a technique is thoroughly proved, however, it should not be assumed when planning a design. Instead the material to be formed should be obtained in either the annealed condition or W (solution heat treated) condition, depending upon the part in question and the material concerned. Pressed parts can readily be made of 24S, R301, or 75S in the annealed condition, restruck after the solution heat treatment, if necessary, and then aged. Parts to be made of 24S-T81 and 24S-T-86, of course, must be made from as-received stock, since their final strength depends to a considerable extent upon the cold work they receive prior to aging. Parts of 24S-T84 material are formed in the annealed condition, solution heat treated, stretched, and aged; but if joggling is required, it should be done before aging. In any case they should not be reworked or otherwise cold worked after the aging operation.

The aged alloys may be joined successfully by the same method conventionally used with unaged material,

TABLE II

Fabrication Data for High-Strength Aluminum Alloys

Material		Spot Welding		Forming Characteristics				
Designation	Form	Weldability	Strength Compared to 24S-T	Bend Radii	Joggling	Dimpling	General Forming	Finishes
24S-O	Clad Sheet	Good	Lower	0t	Very good	Very good	Very good	None
24S-T	Clad Sheet	Good	Same	3t	Good	Good	Good	None
24S-T80	Clad Sheet	Good	Higher	4t	Fair	Fair	Fair	None*
24S-T81	Clad Sheet	Good	Higher	4t	Poor	Poor	Poor	None*
24-RT	Clad Sheet	Good	Same	4t	Fair	Fair	Fair	None
24S-T84	Clad Sheet	Good	Higher	5t	Very poor	Very poor	Very poor	None*
24S-RT[1]	Clad Sheet	Good	Same	4t	Poor	Fair	Fair	None
24S-T86	Clad Sheet	Good	Higher	6t	Very poor	Very poor	Very poor	None*
R301-O	Clad Sheet	Good	Lower	0t	Very good	Very good	Very good	None
R301-W[2]	Clad Sheet	Very good	Same	3t	Good	Good	Good	None
R301-T	Clad Sheet	Very good	Higher	4t	Poor	Poor	Poor	None
75S-O	Clad Sheet	Good	Lower	1t	Very good	Very good	Very good	None
75S-W[2]	Clad Sheet	Very good	Higher	2t	Good	Good	Good	None
75S-T	Clad Sheet	Very good	Higher	5t	Very poor	Very poor	Very poor	None
75S-O	Extrusions	[3]	[3]	1	Very good	Very good	Very good	Anodize and prime
75S-W[2]	Extrusions	[3]	[3]	3t	Good	Good	Good	Anodize and prime
75S-T	Extrusions	[3]	[3]	6t	Very poor	Very poor	Very poor	Anodize and prime

Notes: * Army requires that the edges be primed.

1. Denotes clad 24S-O that has been solution heat-treated and stretched to a set of 4 pct.
2. The bend radii for the W condition are for material with 24 hr of normal room temperature aging.
3. Spot welding of this material is not recommended.

i.e., riveting, bolting, spot welding, or Metlbonding. As shown in table II, the spot weldability of the aged alloys is very good and the shear strengths of the welds are somewhat greater than are to be found with clad 24S-T sheet. Care should be exercised in riveting since the increased notch sensitivity of these materials may result in cracks when riveting is done near deep scratches or notches. The 30 min at 330°F required in curing Metlbond or similar cements will not appreciably reduce the mechanical properties or corrosion resistance of any of these aged alloys; however, Metlbonding may not be done prior to aging any of these because the aging temperatures involved are too high for the Metlbond material. Spot welding may be done prior to aging, if desired, since the aging temperatures do not affect the welds adversely. In the case of rivets driven prior to the aging heat treatments, none of them (A17S-T, 17S-T, 17S-TA, and 24S-T) are affected appreciably by the 250°F temperature used with 75S material. The higher temperatures used with the copper alloys, however, tend to reduce the shear strength of A17S-T rivets as much as 7 pct, do not particularly affect the strengths of 17-S-T and 17S-TA rivets, and increase the strength of 24S-T rivets as much as 10 pct. The corrosion resistance of these rivets is not affected.

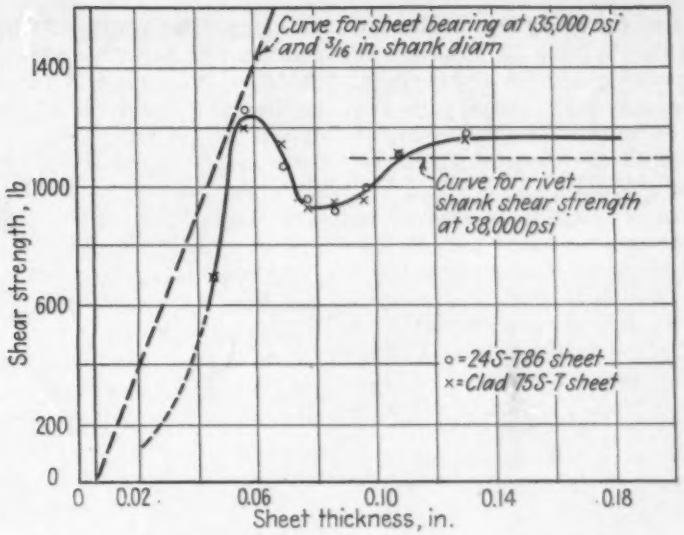


FIG. 3—Typical curve of the strength of a riveted joint. Rivet head thickness 0.070 in., rivet diam 3/16 in., drill size 0.191 in., edge distance 3.27 diam.

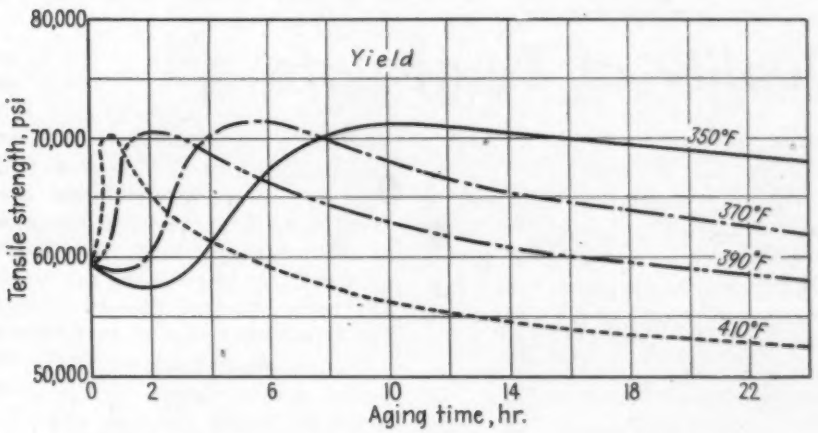


FIG. 4—Mechanical properties of clad 24S-RT aged at several temperatures.

Admittedly a rather small amount of experience has been had in machining aged materials, but it is indicated that they machine as readily as unaged material and that 75S-T machines as easily as 24S-T. Machining, if possible, should be done in the unaged condition and, in the case of 75S-W, as soon after the solution heat treatment as possible so that straightening difficulties may be kept to a minimum.

In the event that assembly aging is necessary or desirable, note should be taken of the fact that a number of materials customarily to be found in aircraft assemblies will not satisfactorily withstand the aging temperatures used with 24S, 14S, and R301 alloys. These are plastics, rubber, rubber substitutes in general, units with fiber inserts, bearings containing lubricant, all fuel tank sealants, and all cements such as Metlbond and Cycleweld. Magnesium alloys, if in the hardened condition, are annealed. The 75S-T and R303-T materials are over-aged and would have a considerably reduced strength. Aluminum alloy castings, in general, would have a slightly reduced strength. Unclad 24S-T sheet should not be used as it has a reduced corrosion resistance compared with the aged clad sheet.

Finish requirements are not

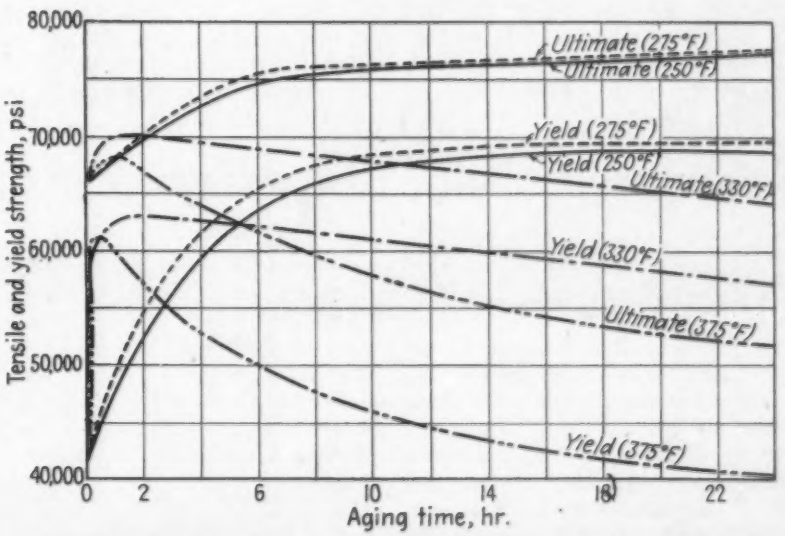


FIG. 5—Mechanical properties of clad R303-W aged at several temperatures.

changed by the aging heat treatment, as is shown in table II. It should be noted, however, that the copper alloys, if under-aged, have reduced corrosion resistance in the core material; if over-aged, the corrosion resistance remains satisfactory.

The inspection of these aged alloys is, at present, a serious problem because there is no known nondestructive test whereby the exact degree of hardening may be determined. The conventional Rockwell and Brinell testers will not work as the readings appear to be a function of the ultimate strength and aging.

Heat treatments principally increase the yield strength, the increase in ultimate strength being within the scatter of the hardness readings. Etchants have been developed whereby it may be determined whether or not the materials 24S and 75S have been subjected to the aging temperature; but their action is not sufficiently precise to make known the degree of aging. For example, the etchant reaction for 24S-T86, when aged at 375°F, is the same at 2 hr as at 6½ hr, the latter being the required time at this temperature. These etchants, however, in combination with close attention to furnace control and suitable tension test specimens for each furnace charge, may be used with confidence by classification, when necessary.

A satisfactory spot test has also been suggested and is available to differentiate between 75S and aluminum alloys containing no zinc. The spot test is applied to the surface of the clay alloys, whereas the etchants are applied to the core material. Close furnace control is particularly important, not only to be certain that the furnace completes the proper cycle with each charge but that the temperature distribution throughout the furnace is uniform. In addition to tension samples, a green or red lacquer may be used, in the case of 24S material to differentiate between aged and unaged material, since the aging cycle will cause either color to turn to a dark mustard color. This color change, as with the etchant test, is not precise, but it does show that the material has been subjected to a temperature at or near the aging temperature and with an appreciable exposure.

There are many types of furnaces that will accomplish artificial aging of the new high-strength aluminum alloys satisfactorily. Since the temperature is very critical, especially when a high temperature, short time cycle is used, the temper distribution throughout the loading area of the furnace must be uniform. The control equipment also must be very good, i.e., the on-off temperature sweeps must be small, in the order of 20°F or less. The overall spread in temperatures from all sources during the aging cycle should be within ± 50F.

The Quality of Terneplate

THE usual methods for determining the thickness and coating composition of terneplate involve either the complete dissolution of the specimen in dilute acid, or stripping the coating in hot concentrated sulphuric acid, and subsequent analysis for tin and lead. These methods are lengthy and inconvenient and a simpler procedure, where a number of routine determinations are to be made, has been worked out in the laboratories of the Tin Research Committee.

It was found that all hot-dipped tin-lead alloy coatings on steel could be dissolved, without attack on the base metal, in Clarke's solution (cold hydrochloric acid containing antimony trichloride), as used for pure tin coatings. The reaction on terneplate is considerably slower than with tin-plate, taking about 1 min for each 1 lb of coating per basis box.

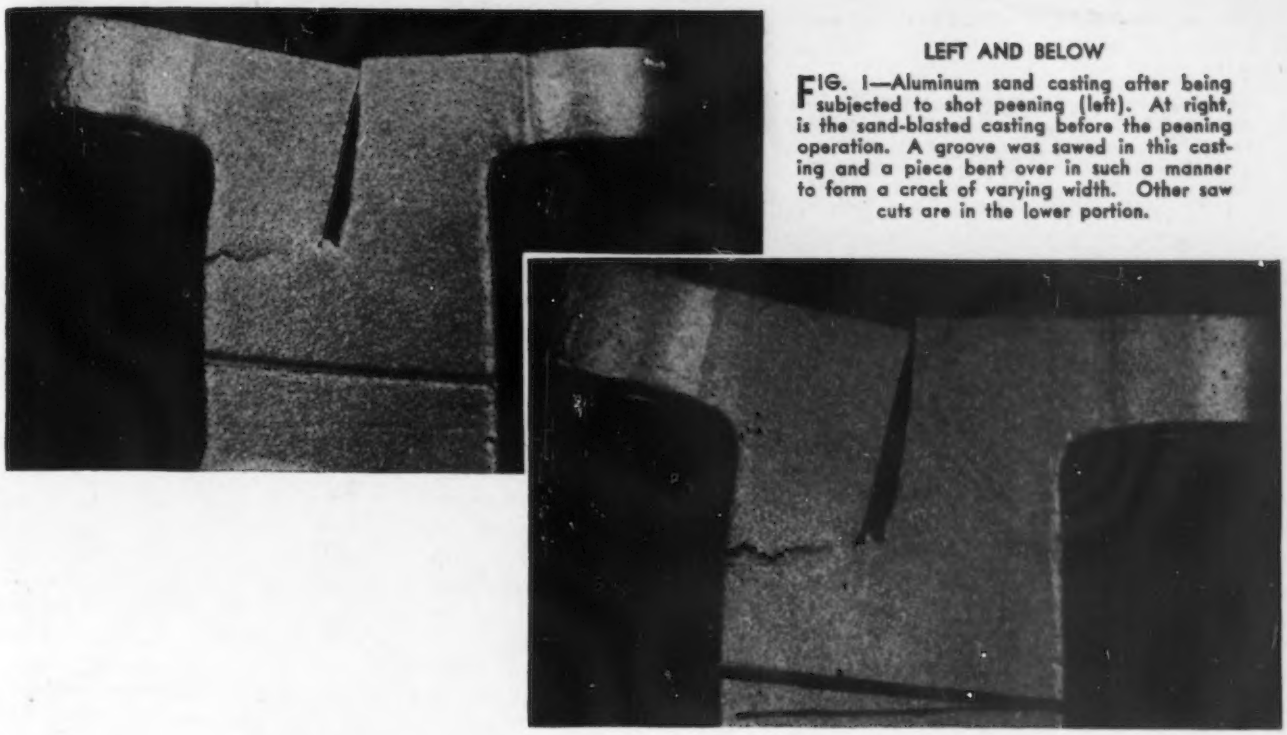
The recommended method may be briefly summarized as follows: Select a sample of known area to give a coating weight not more than 0.8 g, degrease, dry and weigh. Attach to a nickel wire and immerse in 100 ml of the stripping solution. When the coating is dissolved, quickly remove the loose deposit, keeping the specimen immersed. Remove the clean steel, wash, dry and weigh. Transfer the solution with the deposit and washings to a conical flask, connect to a supply of carbon dioxide and boil for 10 min. Cool, dilute with 100 ml of water and add 5 ml of 1 pct starch solution and 1 ml of 10 pct potassium iodide solution. Titrate with N/20 potassium iodate. The iodate should be standardized against a mixture of tin and lead, in approximately the same proportions as on terneplate, dissolved in the stripping solution and treated as above. By this method the weight and composition of tin-lead coatings can be ascertained in 30 to 40 min.

Other suggested applications of the method are for measuring the distribution of coating thickness and composition over the surface of a sheet of terneplate; for analysis of electrodeposited tin-lead alloys on steel; and for the determination of tin in tin-lead solders (after rolling to foil). Alloys containing more than 25 pct of tin may be analyzed in the same way by dissolving a suitable quantity of lead with the sample.

Bessemer Steel for High Pressure Steam Piping

BESSEMER steel is still by many considered brittle, and consequently its use frequently has been restricted largely to structures or parts in which this property is not important. However, a decided improvement has been made in this type of steel, so that a modern variety may now be obtained having properties vastly superior to those of the older type. This improvement has been brought about largely by controlled deoxidation of the steel during its manufacture. Many of the mechanical properties of these fully-killed acid-bessemer steels are similar to those of openhearth steels and they may be used interchangeably in some applications.

At the request of the United States Coast Guard, George A. Ellinger and Morgan L. Williams of the National Bureau of Standards, metallurgy division, recently completed a comparison test of fully-killed acid-bessemer steel pipe and openhearth steel pipe of the type used for high temperature, high-pressure steam service in merchant ships. The yield strength and tensile strength of the bessemer steel were somewhat higher than those of the open-hearth steel, whereas the elongation was slightly lower. Notched-bar tests (using special subsize Charpy V notch specimens) in the temperature range 925° to 50°F indicated that the impact properties of the fully-killed bessemer steel were as good or better than those of the openhearth steel.



LEFT AND BELOW

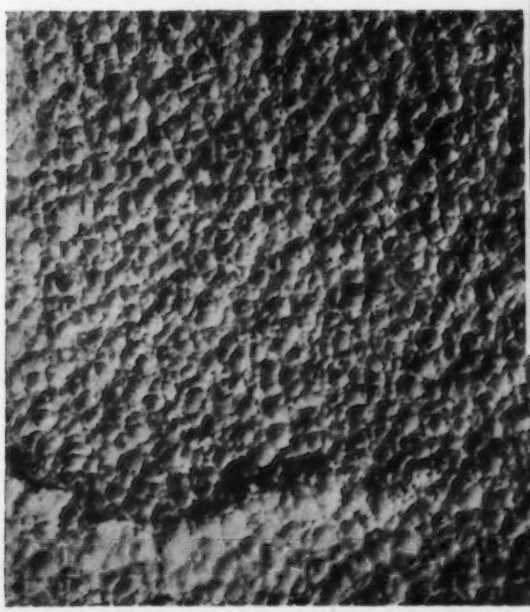
FIG. 1—Aluminum sand casting after being subjected to shot peening (left). At right, is the sand-blasted casting before the peening operation. A groove was sawed in this casting and a piece bent over in such a manner to form a crack of varying width. Other saw cuts are in the lower portion.

Shot Peening Effect on Aluminum

• • • **Considerable surface** differences are observable of the effects on aluminum sand castings by shot peening as compared with sand blasting. The results of a test by the production development laboratory of North American Aviation, Inc., show a slightly greater corrosion resistance following shot peening, which gives a darker appearance to the casting and obscures any small cracks or porosity visible at the surface.

BELOW

FIG. 2—Crack after shot peening, magnification 12X. Hollows lend an overall darker appearance.



ABOVE

FIG. 3—Sand-blasted and shot-peened aluminum castings after being subjected to 120-hr salt spray test at North American Aviation. The sand-blasted specimen corroded slightly faster and more heavily, and also had more red corrosion products, not apparent in the photograph.

. . . Finishing Spur Gears for Ai

MODERN aircraft engines represent a culmination of knowledge and skill in handling design, materials, and manufacturing techniques that has resulted in high reliability under extremely severe operating conditions. Tomorrow's commercial aircraft engines will show not only high reliability but also long useful life together with high efficiency in regard to fuel consumption and the elimination of excess weight.

To obtain high reliability and to acquire, in addition, long useful life and high economy in commercial aircraft, requires an optimum design of each component part of the engine, and the incorporation of devices that increase the safety and efficiency of operation. These devices have resulted in the extensive use of gearing in modern aircraft engines. While the most elementary form of the four-cycle aircraft engine requires only one pair of gears, cam gears, present units benefit from the use of reduction gearing, gear driven superchargers and many other gear driven auxiliary devices.

The development and application of gearing to the aircraft engine has gone along hand in hand with the growth of the engine as a whole. Design techniques have improved with the years, and tremendous strides have been made in metallurgical development. But without modern gear manufacturing methods, neither design nor metallurgical developments could be exploited for extensive use.

On well designed gears of minimum weight and size, no compromise can be made with accuracy without courting structural failure. Type testing may indicate that modifications are necessary, but once the necessary deviations on profile and lead are established, close tolerances on tooth form, spacing, and lead must be held.

To hold these extremely close tolerances two major methods are available to the manufacturer. These involve the use of either tooth grinding or tooth shaving. Shaving has been in the aircraft field for but a short time, having been developed in the automotive field, but it is now competing strongly with tooth grinding. Controversies as to the superiority of either method are continuous. However, time alone can tell which is the better method; and both will, in all probability, be used for some time to come.

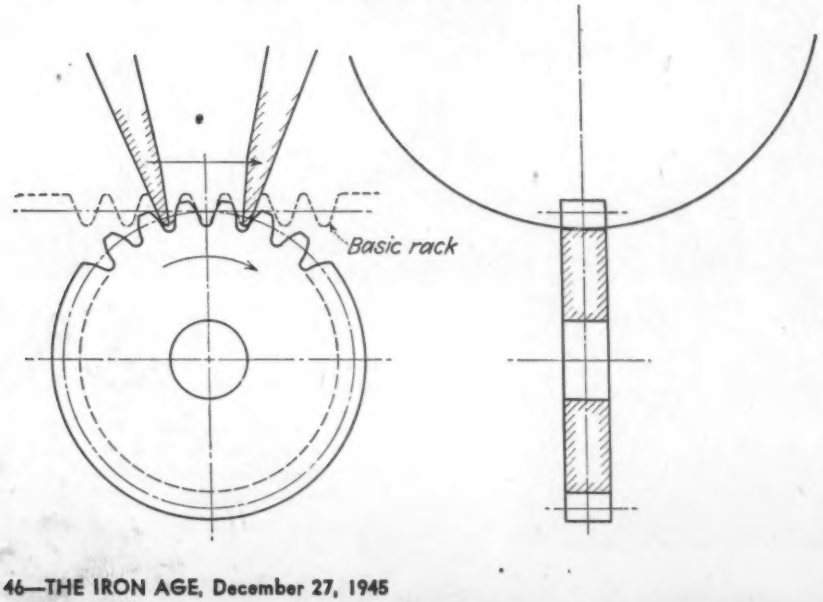
For other articles on gear shaving and grinding, see THE IRON AGE, *issues of Dec.* 24, 1942, *Aug.* 5, 1943, *and April* 12 *and April* 19, 1945.

The extremely hard working surface of the majority of aircraft engine gear teeth, obtained by case hardening, cannot be machined by the use of cutting tools. Tooth grinding has permitted the manufacture of case-hardened gears to extremely close tolerances since tooth grinding can be applied after hardening, thus limiting the accuracy to the precision of the grinding machine alone. A possible exception to this is in the case of the gear with an extremely thin cross-section in which the relieving of surface stresses by grinding may introduce distortion.

There are two distinct methods available to the manufacturer in the tooth-grinding field. These are the generating and the forming methods. The generating method makes generous use of the fact that the basic rack of the involute system is straight sided. A grinding wheel can easily be dressed to conform to the shape of such a basic rack. Once this form has been dressed, the grinding machine needs only to pass the gear by the wheel, and to provide a rolling motion which duplicates the roll of the gear with the basic rack. As the grinding wheel represents only one tooth or part of a tooth on the rack, some means of indexing from tooth to tooth on the gear must be provided.

Variations in the types of grinding wheel geometry have resulted in differently designed tooth-grinding machines. If the grinding surface of the wheel is dressed by passing a diamond over it in a direction normal to the axis of rotation of the wheel, a plane surface on the wheel results. The axis of the wheel must then be tipped with respect to the path of relative motion between the gear and wheel to the pressure angle of the basic rack. It is customary to use two grinding wheels on such a machine, one for each side of the tooth. The plane surface of the wheel lies in the plane of the tooth surface of the imaginary basic rack. Relatively large-diameter wheels must be used to reduce the arc effect. The arc effect results in deeper grinding in the center of the tooth face than at the outer ends, owing to the curvature of the outside of the wheel. On a gear with a 1-in. face width, ground with a 20-in. flat dressed wheel, the wheel will grind 0.013 in. deeper into

FIG. 1—Principle of the two-wheel, non-reciprocating type of generating gear grinder, using flat dressed wheels inclined to the pressure angle of the basic rock.



Aircraft Engines . . .

By SIDNEY CORNELL
Gear Engineer,
Pratt & Whitney Aircraft

. . . Economy of operation, together with light weight, are important factors in the engines of modern commercial aircraft, and gearing plays an important part in bringing these into being. In this article the author discusses the merits of both the grinding and shaving methods of finishing aircraft spur gears, and describes the principles upon which each process operates.

the root in the center of the face than on the outer ends. The depth differential increases rapidly with face width, thus putting a limitation on this type of machine. The rate of production, however, is high.

A second application of the grinding wheel incorporates a single wheel which grinds both sides of the teeth at a time. The axis of the grinding wheel lies in a plane parallel to the relative motion of the gear and the grinding wheel. Each side of the wheel is dressed to the pressure angle of the basic rack. The grinding surface of the wheel is conical in shape and consequently has only line contact with the surface of the basic rack. In order to grind the full face width of the gear, the wheel must be reciprocated. This results in constant grinding depth across the face of the gear, thus eliminating one of the objections to the flat-dressed wheel. Of course, there is no reason why the flat-dressed wheel could not be used in conjunction with the reciprocating head to give constant grinding depth, but it then has no advantage over the simpler single wheel conically dressed.

Some other variations of grinding wheels are found, but they are little used in this country. These are seen in reciprocating and non-reciprocating cup type wheels which are the same in principle as the flat dressed wheel. Other variations are conceivable.

Contrasting sharply with the generating method, is the form-wheel method of tooth grinding. The axial section of a grinding wheel is dressed to correspond to the form of the tooth space, and then passed through each tooth space, imparting the wheels form to the work. An indexing device, of course, must be used to move the wheel from one space to the next.

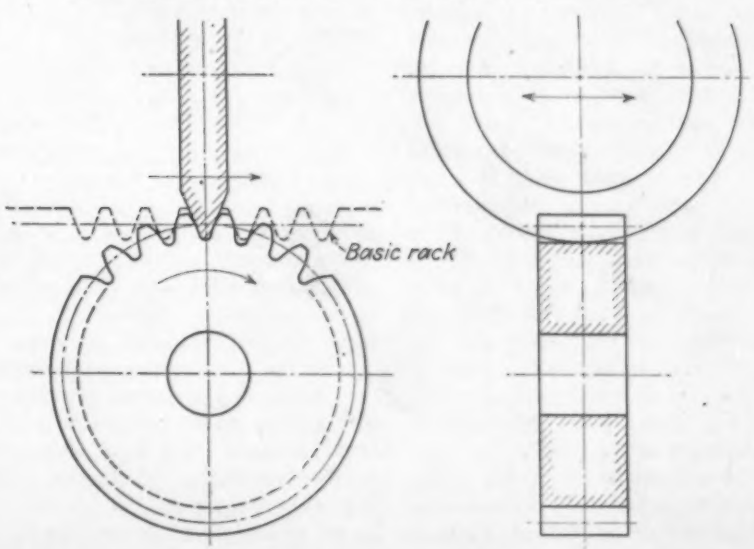
Two problems unique to this method are encountered. First, the wheel must be dressed accurately to the form of the tooth space; and second, the wheel must be fed into the work exactly the right amount properly to position the tooth space radially.

A common method of accurately dressing the grinding wheel is to pass a diamond over it in an involute path controlled by a master cam. The master cam is usually six or more times larger than the involute of the gear being ground, and the motion of the cam follower is reduced through a pantograph mechanism so that the motion of the diamond is scaled down the proper amount. Other methods of controlling the path of the diamond have been or are being used. One of these depends on the underlying principle of the involute curve, and controls the path of the diamond by the use of a mechanism which duplicates the action of a string unwinding from a base cylinder. Another uses a circular cam the profile of which is not an involute, but the angular rotation of which imparts an involute path to the diamond through a suitable mechanism. An entirely new method of dressing the wheel for form-tooth grinding is being tried, in which the wheel is dressed without the use of diamonds. Crusher rolls are used which roll on the surface of the slowly rotating grinding wheel and crush it to the involute form of the roll. Just what results in production will be obtained have not as yet been established.

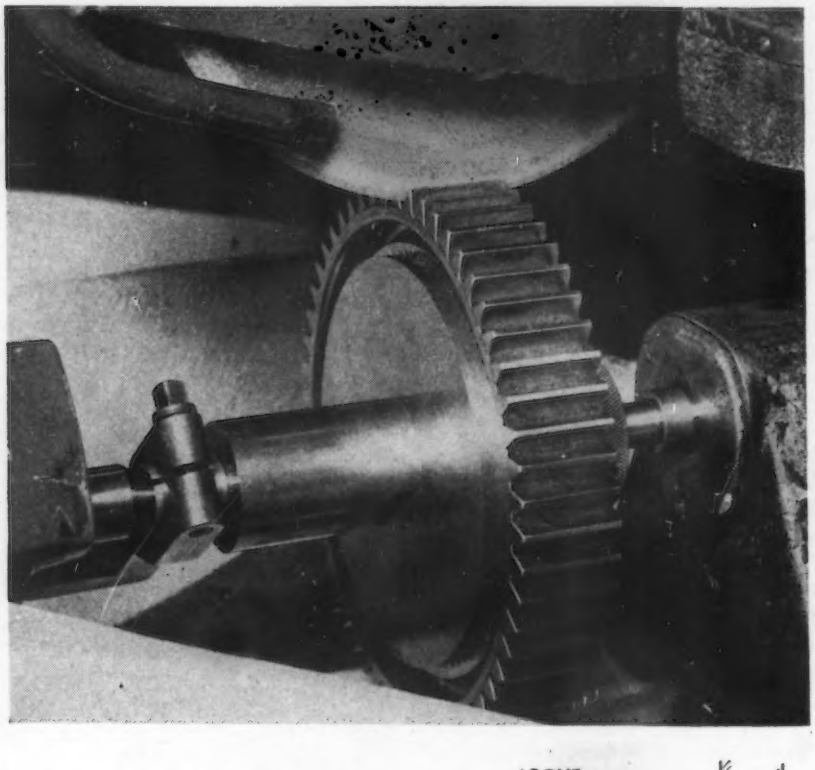
The task of positioning the wheel radially is analogous to the old problem of the proper depth of cut for form-tooth milling cutters. If the cutter or grinding wheel is not fed in deep enough, the result will be a tooth form with a high bearing. If fed in too deep, a low bearing is obtained. Once a setup has been established, however, production can be run with only minor adjustments to allow for diamond wear.

The rate of production with form tooth grinding compares favorably with that of the single-wheel generating method. It has the disadvantage that somewhat more skill is required in operation. However, the form-wheel method lends itself to internal work, whereas the generating method does not. Also, at the present time, the form-wheel equipment on the market permits the use of a much smaller

FIG. 2—Principle of the single-wheel generating gear grinder, using a reciprocating wheel conically dressed to conform to the shape of the basic rack.



wheel than the generating type of machine. This means that gears with shoulders close to the end of the gear teeth can often be handled with the form wheel grinder, where the generating wheel grinder with its larger wheel would be unable to operate without striking the shoulder. There is no reason why the generating type of machine could not be developed to use a small wheel for grinding shoulder gears, and some development work along this line is being done.

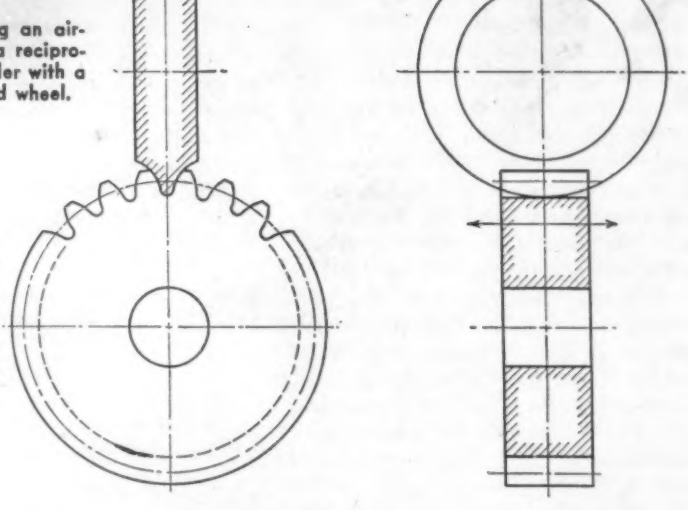


ABOVE

FIG. 3—Grinding an aircraft gear on a reciprocating head grinder with a conically dressed wheel.

RIGHT

FIG. 4 — Principle of the form-wheel type of grinder in which the wheel is accurately dressed to the form of the tooth space.

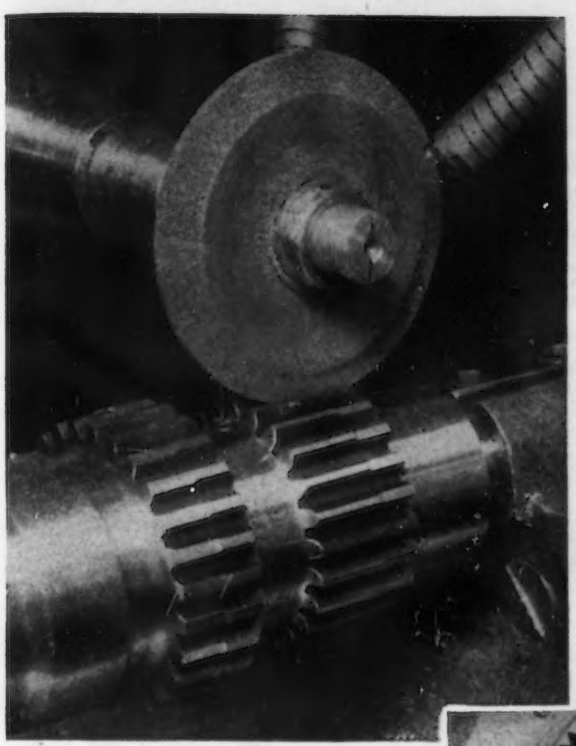


Tooth Shaving

A shaving tool or cutter as used today looks something like a master gear with serrations on the working surfaces of the teeth, and the question is often asked, "What makes it cut?" That it does cut is evident from the fact that the chip pan of a shaving machine in production must frequently be cleaned of pounds of fine chips. The shaving tool, in most cases, has a helix angle which differs from that of the work by from 1° to 20°, with the majority in the 12° to 15° range. This difference in helix angle results in a relative motion or slippage between the cutter and the work in a direction which gives a cutting action to the serrations on the working surfaces of the shaving tool. This slippage exists even if the helix angle of the cutter or of the work, but not both, is zero. In other words, a helical cutter on helical work, a helical cutter on spur work, or a spur cutter on helical work will all give slippage depending on the difference in helix angles. This difference in helix angle is commonly referred to as the crossed axis angle and is the angle at which the tool is set in the shaving machine. A good shaving job shows a tooth surface with a high quality cut finish and little evidence of burnishing.

As shaving is a cutting operation, it must be done before case hardening the teeth. As some aircraft engine splines, and a few gears, are not case hardened, they lend themselves to the possibility of shaving after final heat treatment. In no instance is it practical to shave gears or splines of such materials as AMS 6260, AMS 6294, or AMS 6274 at hardnesses higher than 40 Rc. When it is necessary to shave in the range from 30 to 40 Rc, somewhat shorter than normal tool life is obtained. When gears are shaved before final heat treatment, the best results appear to be obtained in the range from 20 to 26 Rc, although this is somewhat lower than that recommended for ordinary steels. Minimum distortion in heat treatment is obtained by shaving the gears after carburizing and before hardening, but tool life is so poor that it is not a practical method for production in appreciable quantities. Furthermore, although the distortion from heat treatment is somewhat greater when the shaving is done before both carburizing and hardening, it is of a relatively uniform nature and can be allowed for in the shaving operation itself. This, of course, applies only if the gear blanks themselves are of such a nature that they can be open tank quenched without warping or going out of round, or that they can be kept from warping by the proper use of quenching dies. The distortion which must be allowed for appears as an increase in tooth thickness and in a "weakening" of the involute. In helical gears there is a tendency for them to unwind. Methods for allowing for these distortions are obvious.

The first use to which shaving was put on aircraft engine gears was on gears of such a design that they could not be ground. Although shaving cannot be done without a certain amount of clearance between an obstructing shoulder and the end of the gear teeth, it can be used where there is much less clearance than would



LEFT

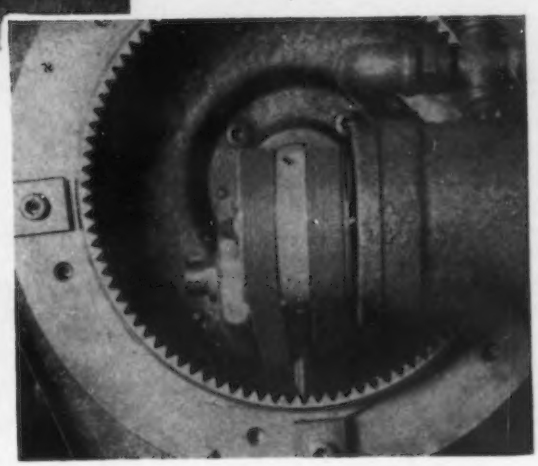
FIG. 5—Form grinding a gear adjacent to a larger gear, an operation not possible with either of the two other methods shown in figs. 2 and 3.

BELOW

FIG. 6—For grinding internal gears the form wheel grinder is the only type currently available.

LOWER RIGHT

FIG. 7—Crossed-axis principle of gear shaving in which the angle between the axes may be as small as 1½°.



be required by the smallest grinding wheel available. To use a shaving cutter on gears that have little shoulder clearance, requires a reduction of the crossed axis angle from the usual 12° to 15° range. The less the clearance, the lower the crossed axis angle must be. The lower the crossed axis angle, the less slippage between the cutter and the work and the less cutting action obtained. Before shaving was used to any extent on aircraft engine gears, crossed axis angles of less than 4° were almost unheard of. Because of the great need for improving the quality of gears which could not be ground, the manufacturers of shaving equipment did considerable development work which enabled the use of cutters designed to work with crossed axis angles of as little as 1½°. The low crossed axis angle resulted in very little cutting action as compared with the tendency of the tool to burnish the tooth surface. Although the ideal high quality finished cut surface was not obtained, an acceptable, partly burnished, partly cut surface resulted. Parts processed in this way were definitely superior to those processed by any other method available.

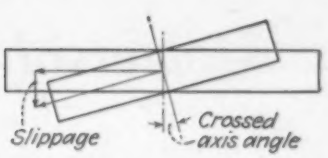
Later, shaving was used on gears which could be ground but which were not for use at points where large amounts of power were transmitted. Shaving has not been applied extensively to heavily loaded gears that can be ground because the required quality, at least at the present state of development, can be more easily obtained by grinding. To obtain quality equivalent to that of a precision ground gear by shaving, requires extreme care in pre-shaving (that is, roughing out the teeth for shaving), in shaving, in heat treatment, and in relocating reference surfaces. Constant vigilance must be maintained to discover and correct the effects of dulling of the tool on the involute profile produced.

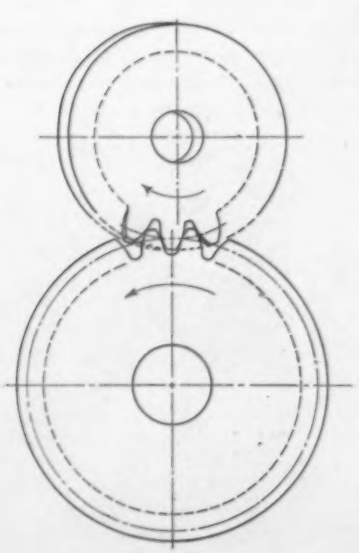
Further development in the field of shaving heavily loaded gears is urged forward by several factors. Shaving is much faster than tooth grinding, and use of this method consequently requires less equipment to handle a given volume in a given time. Since no stock is removed from the tooth surfaces after carburizing and hardening, the problem of maintaining adequate case depth in critical areas on the working surface of the tooth and in the highly stressed root fillet are eliminated. Surface decarburization does present a problem here, as no appreciable stock is removed from the working surface of the gear after hardening. However, proper precautions in protecting the surface in the hardening operation will reduce this hazard to a minimum.

Another method of shaving now on the market depends on the reciprocation of the shaving tool for cutting action. The crossed axis angle is zero. This is usually referred to as "parallel axis" shaving. It is best adapted at present to internal work and has a marked advantage over the crossed axis method in this application, in that little shoulder clearance, as is often found on internal work, is required.

Non-conventional methods of heat treatment are being extensively investigated. These methods usually subject the part to less severe quenching conditions with resulting lower overall distortion. They open up possibilities for successfully processing with shaving any gears with intricate blanks, the distortion of which could not be entirely controlled by quenching dies. Indications are that local distortions of involute and tooth thickness are not reduced by these new methods.

Of the many gears in an aircraft engine that are shaved before carburizing and hardening, all present a routine problem in cleaning after hardening. Of many





methods of cleaning that are available, the most commonly used for cleaning shaved gears are light sand blasting, sometimes followed by laping, the Bullard Dunn process (patented), and wet abrasive blasting. Light sand blasting with pressures of about 20 psi does not damage the involute profile but leaves much to be desired in surface finish. Some impovement is obtained by lapping the teeth after sand blast, but surface finishes are still not as good as before the heat treating operation. The Bullard Dunn process is an electrolytic process which attacks scale and stains. The loosened scale is subsequently removed by a wire brushing operation. The parts must then be baked for 1 to 2 hr at 300°F to eliminate hydrogen embrittlement. After processing, the parts appear as they did before heat treatment, and show no change in surface finish. A third method of cleaning the teeth is to subject them to wet-abrasive blasting. This is similar to sand blasting in that the parts are subjected to a blast of abrasive. In wet-abrasive blasting, however, the abrasive is much finer and is suspended in water. Results obtained show complete removal of scale and stains, together with good surface finish.

Teeth which are to be ground usually are roughed out leaving from 0.004 in. to 0.008 in. stock for grind on a side. The amount of stock for shaving usually is less than 0.0015 in. on a side. Roughing for grinding or for shaving is done either by hobbing or by shaping. Hobbing is a generating process using a crossed axis principle and having an action similar to milling. It is the fastest method of roughing gears for grinding where speeds can be pushed up at the expense of finish and accuracy. Slower speeds of production must be used when roughing for shaving (called pre-shaving), as accuracy and finish must be of higher quality. Hobbing is limited in that it cannot be used on gears with little shoulder clearance. Gear shaping on the Fellows gear shaper can be used on gears with very little shoulder clearance and consequently is used extensively on gears to be shaved, although it is also widely applied on gears to be ground. Gear shaping also uses a generating principle, and with a reciprocating cutter shaped like an involute pinion. Gear shaping cannot be pushed as hard as hobbing, and consequently is not as fast for roughing prior to grinding.

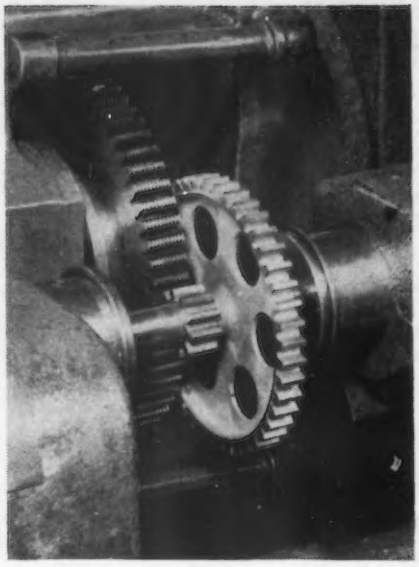


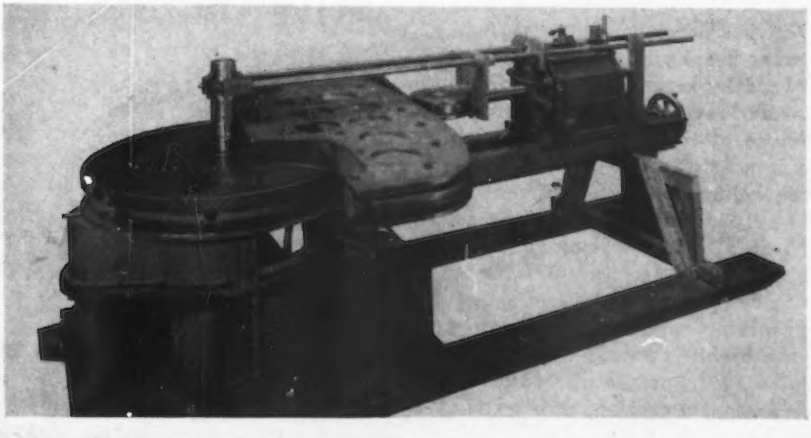
FIG. 8 — Tooth shaving at a cross-axis angle of 1½° on a gear with little shoulder clearance.

A special problem is encountered in preshaving. Clearance in the form of an undercutting at the root of the tooth must be provided in order to avoid a shoulder in the root in shaving. This clearance is provided by the use of special preshaving hobs or Fellows' cutters which have a proturberance on the tips of their teeth.

Universal Bender for Pipes and Shapes

CONSTRUCTION and maintenance work usually necessitate a great deal of bending work, whether this be of pipe, tubing, or structural shapes, and four general types of bending machines are customarily employed, each having its own characteristics and applications.

All of the features of the four types namely compression, tension, roll and ram types, have now been combined into a single machine, according to an announcement made by Pedrick Tool & Machine Co., Philadelphia. The new machine comprises a central housing containing the driving gears by which the face plate may be rotated in either direction, and an extension arm carrying the air cylinder. The central spindle is separately driven by worm gears and may be rotated independently of the table. Bending arms are provided, one being bolted to the face plate gear, and the other latched to the housing. Rollers on each arm are adjustable in or out, and may be connected to a gear drive so that all three rotate in the correct directions.



It is claimed that no combination of bends is so complicated as to be unbendable on this one machine, and that many structural shapes of alloys, considered unbendable when cold and unannealed, have succumbed to it.

Early Aluminum Alloys

. . . Metallurgical studies, reproduced from Sheet Metal Industries, of early aluminum alloys from both British and German rigid airships, reveal the early discovery of duralumin alloys, although their age hardenable properties had not yet been known. Quality of the British and one of the German alloys was poor while two of the German alloys compared favorably with that of modern alloys. In addition to being of historic interest, the influence of delayed quenching on resistance to intercrystalline corrosion is discussed.

o o o

By K. J. B. WOLF

o o o

FOUR samples of early aluminum-base alloys have recently been examined. The first sample was of English manufacture, and was a part of the framework of Navy Dirigible No. 1. This was an experimental airship built for the British Government's aeronautical program during the years 1909-11, by Vickers in Barrow. It was 510 ft long and 48 ft in diam and was fitted with two 200 hp Wolseley engines. The airship was universally known as the *Mayfly*—a name given by some humorist who, after reading about the procrastinations and misadventures experienced during its construction, said: "Well, she may fly!" The ship was wrecked on Sept. 24, 1911, when being taken into position for its maiden flight.

The other three samples were of German origin, and consisted of two channel sections and a rivet of a longitudinal girder from the German Zeppelin L.33 brought down in Essex on Sept. 24, 1916. The ship was 680 ft in length and 72 ft in diam, and its framework was built up from a series of hoops and longitudinal girders in accordance with the usual Zeppelin construction.

The crew set fire to the ship after it had crashed, and it was thought that the aluminum alloy of the framework may have been damaged by the fire. No sign of burning or overheating were, however, noted.

A sample from the Mayfly, about 4 × ⅜ × ⅛ in., was taken from the airship on the day after the disaster by the person who submitted it years later for examination.

A chemical analysis was carried out on the alloy with the following results:

	Pct
Copper	447
Manganese	0.62
Magnesium	0.98
Silicon	0.49
Iron	0.55
Nickel	Nil
Zinc	Trace
Aluminum	Remainder

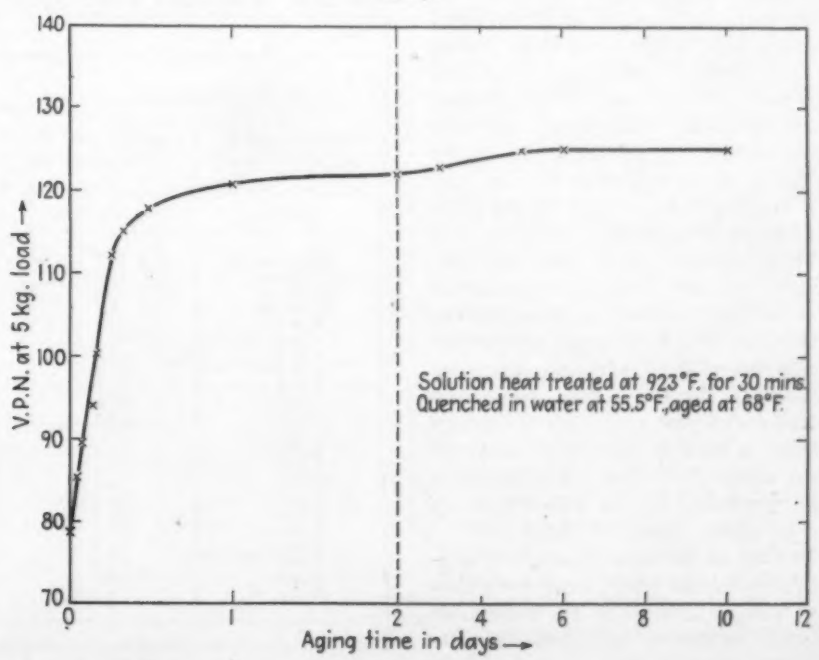
It will be seen that the composition very closely resembles a present-day duralumin-type alloy.

This is very interesting, inasmuch as the phenomenon age hardening was not reported until 1911 by Wilm,[1] yet Vickers had produced an alloy capable of being age hardened two years before this phenomenon was discovered. It would therefore appear that this alloy had been used in the as-rolled condition and without the solution heat treatment necessary to develop the full mechanical properties which it is capable of exhibiting.

Hardness tests carried out on the sample, using a Vickers hardness testing machine operating with a 5-kg load gave a hardness of 85.6 Vpn. It is considered that this hardness value is consistent with a duralumin-type alloy in the as-rolled condition.

In order to ascertain whether the alloy was capable of being successfully age hardened, a small sample was solution heat treated at 923°F for 30 min in a Wild-Barfield forced air circulation tempering furnace,

FIG. 1—Hardness values obtained by age hardening the *Mayfly* alloy showing that this alloy exhibits all the age hardening characteristics of a modern duralumin-type alloy.



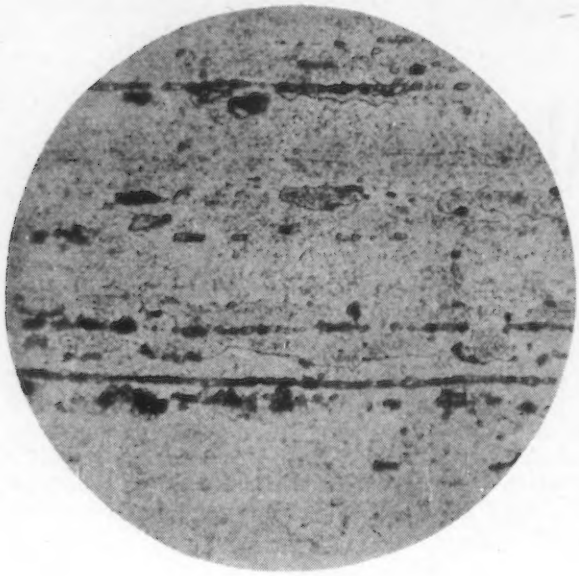


FIG. 2 — General microstructure of the *Mayfly* alloy is also typical of a duralumin-type alloy in the as-rolled condition. At 500X.

followed by a water quenching operation. The sample was allowed to age normally in air at 68°F. Hardness values were obtained at suitable intervals and are shown in table I and fig. 1. It is considered that this alloy shows all the age hardening characteristics of modern duralumin-type alloys.

Microexamination

The general microscopic[3] appearance of the alloy is shown in fig. 2. It is considered to be typical of a duralumin-type alloy in the as-rolled or annealed condition. Fig. 3 shows the presence of rolled-out blowholes and excessive segregation of the intermetallic compounds in the alloy. It therefore appears that the melting and casting conditions, when this alloy was made, do not compare very favorably with present practice. In fact, it is very doubtful if material of such poor quality would be issued by any modern light alloy firm. The structure of the alloy after solution heat treatment and aging for five days at room temperature is shown in fig. 4. It is consistent with a modern duralumin-type alloy in the fully heat-treated condition.

It is interesting to note that the quality of the photomicrographs is marred by a certain number of scratches. These are caused by the large amount of alumina particles present in the alloy, due presumably to the indifferent melting and casting technique used in those early days of light alloy production. The alumina was recognized by its anisotropic behavior under polarized light.

In view of the unsatisfactory microstructure of the alloy, tests were carried out to determine its resistance to intercrystalline corrosion. Resistance to this type of corrosion is most essential in light alloys that have to withstand marine atmospheres.

It has been shown that this resistance is directly connected with the microstructure and thermal history of the alloy.

The test consisted of immersing the samples in an aqueous acid solution of sodium chloride for 24 hr at 68°F. This reagent having the following composition:

Sodium chloride 58.45g
Hydrochloric acid (S.G. 1.16) 27.5 cc
Water ..... to 1 liter

It was developed at the Royal Air Force Establishment by Sidery, Lewis and Sutton,[3] as a means of ascertaining the susceptibility of duralumin type alloys to intercrystalline corrosion. The samples were examined under the microscope after testing, when any tendency to corrosion could easily be seen.

Samples which have been correctly heat treated will be unaffected, while others with incorrect heat treatment will be attacked. It was found that the sample in the as-received condition was considerably affected. On the other hand, the sample which had been solution heat treated and aged for five days was completely resistant to attack by this solution.

This therefore confirms, together with the hardness value and microstructure, the fact that the sample had been incorporated into the framework of the airship without the final solution heat treatment.

The nature of the internal construction of the *Mayfly* was never revealed, but presumably it consisted of a series of 12-sided hoops held by longitudinal girders, after the manner of the German method of airship construction based on the work of Count von Zeppelin. The German airships of this period had a framework of aluminum, and Vickers evolved the alloy under discussion as a substitute for this material. At the time, it was claimed to be very much stronger than the aluminum used by the Germans.

The puzzling feature of the disaster is that the collapse of the framework occurred when the ship was not being subjected to exceptional strains, as it broke up on the surface of the water and not in flight. On the other hand, it had successfully undergone tests for stability and buoyancy on the previous two days.

As far as is known, no report of the investigation into the causes of the mishap has been issued by the British Government. Several things do emerge, however, from the examination of this sample of alloy. They are:

(1) The metallurgical quality of the alloy is very poor, the section showing rolled out blowholes and excessive segregation of intermetallic compounds.

(2) The alloy was used in a most unfavorable physical condition, the mechanical properties shown by this type of alloy in the as-rolled condition being very erratic and unpredictable.

(3) The resistance of the alloy to intercrystalline corrosion, due to the omission of the final solution heat treatment, was very poor. While there was no sign of it on the sample examined, this type of corrosion would have formed a very considerable threat to the safety of the ship. This is due to the fact

Table I

Age-Hardening Properties of the Mayfly Alloy at Room Temperature

Aging Time	Vpn at 5-Kg Load
As quenched	78.7
15 min	82.9
30 min	83.9
45 min	84.7
1.00 hr	85.4
1.50 hr	87.2
2.00 hr	89.3
2.50 hr	91.8
3.00 hr	94.0
3.50 hr	96.0
4.00 hr	100.0
5.00 hr	107.0
6.00 hr	112.0
8.00 hr	115.0
12.00 hr	118.0
1 day	121.0
2 days	122.0
3 days	123.0
4 days	124.0
5 days	125.0
6 days	125.0
10 days	125.0

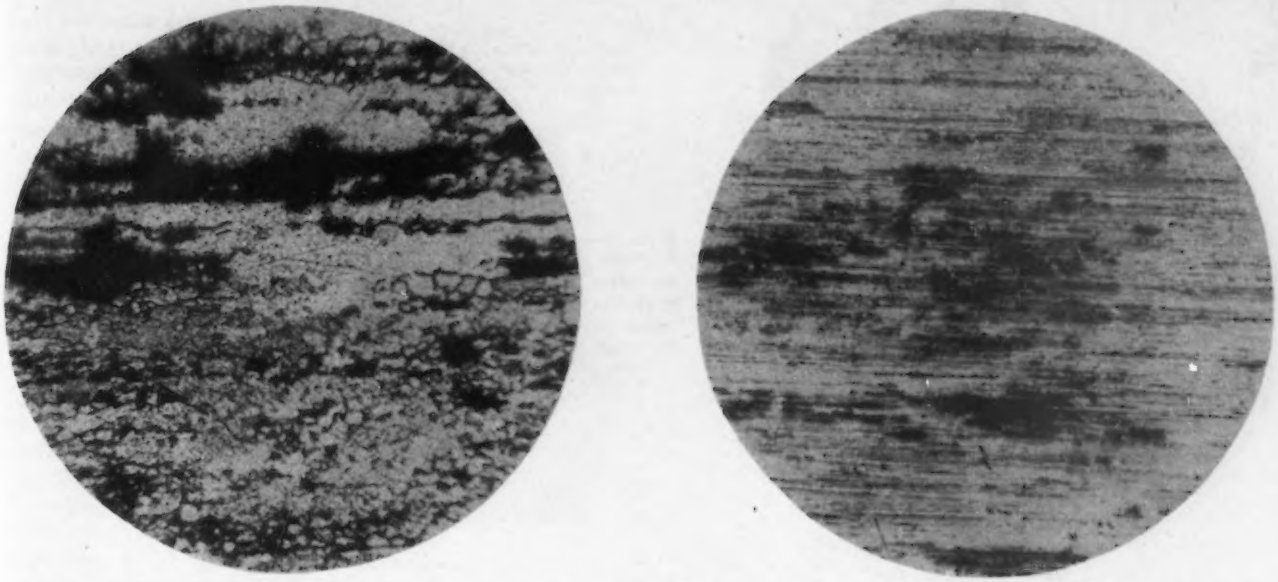


FIG. 3—Rolled out blowholes and excessive segregation of intermetallic compounds in the *Mayfly* alloy. Microphotograph at left at 250X; at right at 25X.

that it would have been in operation mainly in a marine atmosphere, which favors the incidence and continuation of this type of corrosion.

In addition, therefore, to any structural weakness that may have been present, it is considered that, provided the remainder of the framework was typical of the sample examined, the destruction of this airship may have been due to the poor quality and physical condition of the aluminum alloy of which the framework was constructed.

The irony of the disaster is made all the greater by the fact that Vickers had produced a duralumin-type alloy about two years before the discovery of the age hardening phenomenon. If the members of the framework had been correctly heat treated and aged according to modern technique, the whole structure would have been vastly stronger, and the disaster might possibly have been averted.

German Samples

Three samples from the German Zeppelin L33 consisted of two channel sections and a rivet, and were part of one of the longitudinal girders. The longitudinal member was in 18 Swg metal (0.048 in. thick), and the cross braces in 28 Swg material (0.014 in. thick). The rivet was too distorted to give any idea of its original size.

A chemical analysis was carried out on samples. The results are shown in table II.

It appears, therefore, that the three alloys are similar in chemical composition to present duralumin alloys. The iron content of each alloy is, however, considerably greater than the maximum of 0.5 pct allowable in this specification. One probable effect of this high iron content would be to retard the age hardening of the alloys.

In view of the small size of the samples available, it was only possible to subject them to hardness tests. Tests were carried out, using a Vickers pyramid hardness testing machine operating with a 5-kg load, on the samples in the as-received condition and also after solution heat treating at 923°F, quenching in cold water and subsequently aging at room temperature. The results are given in table III for the alloys in the as-received condition. Table IV and fig. 5 show the age hardening properties of these alloys at room temperature.

Table II

Chemical Composition of the Zeppelin Alloys

Element	Longitudinal, Pct	Cross-Brace, Pct	Rivet, Pct
Copper	3.68	3.91	4.00
Manganese	0.03	0.09	0.08
Magnesium	0.55	0.48	0.88
Silicon	0.54	0.58	0.68
Iron	1.32	1.07	1.10
Nickel	Trace	Trace	Trace

Table III

Hardness of the Zeppelin Alloys as Received

	Vpn at 5-Kg Load
Longitudinal	130
Cross-Brace	128
Rivet	128

It can be seen from the results that the age hardening properties of these alloys are very similar to those of a modern type of duralumin. In this case the high iron content of the alloys does not appear to have had any adverse effect on either the rate or the magnitude of the room temperature age hardening properties of these alloys.

Micro examination was carried out on each of the samples. All three appeared to be in the solution heat treated and aged condition; and no sign of burning or incipient overheating could be seen, in spite of the fact that the Zeppelin was destroyed by fire. The general appearance of the longitudinal is shown in fig. 6 and the cross-brace in fig. 7.

The metallurgical quality of the longitudinal is very poor, and, in addition to the presence of several large stringers of intermetallic compounds, two large seams, or rolled out blowholes can be seen in fig. 6. On the other hand the quality of the cross-brace material is good, and compares favorably with duralumin sheet produced by modern methods. Fig. 7 does, however, show one interesting defect —namely, the presence of several areas of intercrystalline corrosion. They are suitably marked on the photomicrographs. Fig. 7, right, shows one of these areas at a higher magnification.

The presence of this defect is very interesting, inasmuch as it shows that the member had probably not been quenched quicky enough from the heat treatment furnace.

It has been shown by Arrowsmith

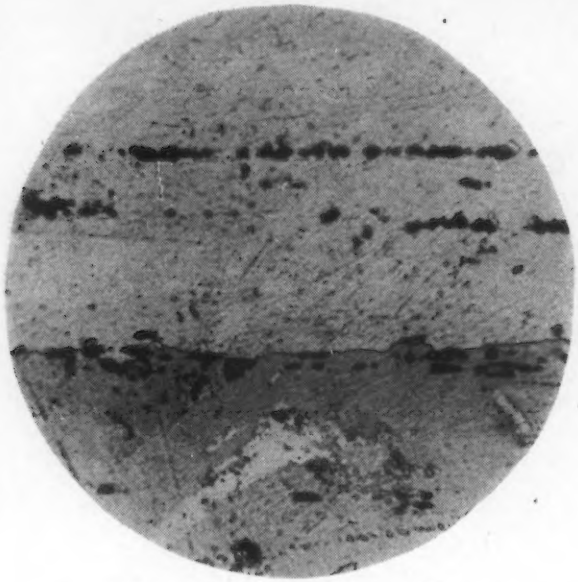


FIG. 4 — Structure of the *Mayfly* alloy after solution heat treatment and aging for five days at room temperature. At 500X.

and Murray[4] that delays greater than 10 sec in the removal of duralumin of this thickness from the furnace to the quenching tank result in the alloy becoming susceptible to intercrystalline corrosion. On the other hand, neither the longitudinal nor the rivet showed signs of this defect, but in view of the fact that the are made of thicker material they would not be so sensitive to any delay prior to the quenching operation.

[1] Wilm, *Metallurgie,* Ser. VIII, No. 8, April, 1911.
[2] J. C. Arrowsmith, K. J. B. Wolfe and G. Murray, *Journal Inst. Metals,* vol. LXVIII, 1942, p. 132.
[3] Sidery, Lewis and Sutton, *Journal Inst. Metals,* vol. XLVIII, 1932, p. 165.
[4] J. C. Arrowsmith and G. Murray, *Sheet Metal Ind.,* 1942, 16 (188), 1879-1884, 1910.

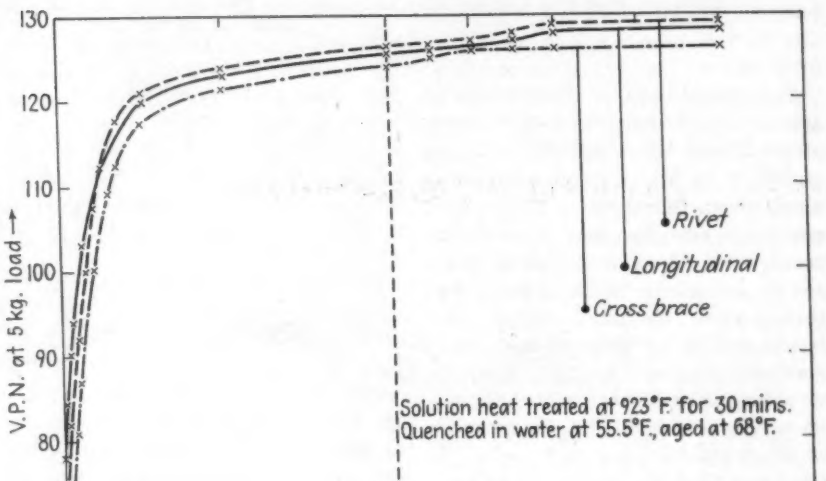
The structure of the rivet is not shown, but it is very similar to fig. 7. There was no sign of undue segregation or seams and the metallurgical quality of the metal compared favorably with that produced by modern methods and equipment.

As a result of the presence of patches of intercrystalline corrosion on the 28 Swg material of the cross-brace samples of all three alloys were tested in the RAE reagent for their resistance to this type of defect. It was found that the cross-brace material had completely disintegrated after immersion 24 hr in the reagent, while the samples of the longitudinal and the rivet were only slightly affected. After laboratory solution heat treatment at 923°F and aging for 5 days at 68°F, it was found that all the samples were completely immune from intercrystalline corrosion after 24 hr immersion in the RAE reagent.

It would therefore appear that at the time of the building of this Zeppelin in 1915, the bad effects caused by delays in quenching after solution heat treatment were not completely understood. This is even more surprising when it is considered that these alloys had been in full-scale production for several years.

Conclusions

The three samples of aluminum alloy examined from the Zeppelin L33 have been shown to be of duralumin type. The metallurgical quality of the 18 Swg channel section which formed part of one of the main longitudinal girders was found to be very poor. The section examined was found to show excessive stringers of intermetallic compounds in addition to several seams due to the presence of blowholes in the original ingot. The metallurgical quality of the 28 Swg



ABOVE

FIG. 5—Age-hardening properties of the three German Zeppelin alloys at room temperature are very similar to those of a modern type of duralumin. The high iron content of these alloys does not appear to have had any adverse effect on either the rate or the magnitude of the room temperature age-hardening properties of these alloys.

RIGHT

FIG. 6 — Microstructure of the 18-Swg longitudinal member at 100X.

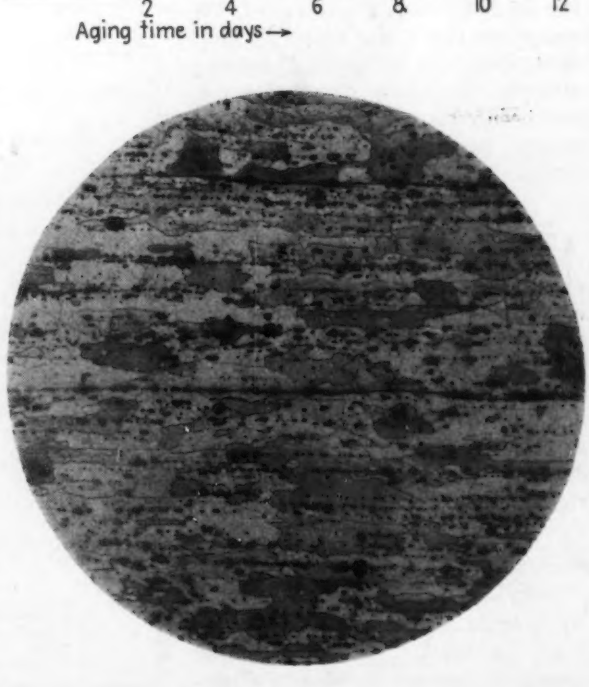
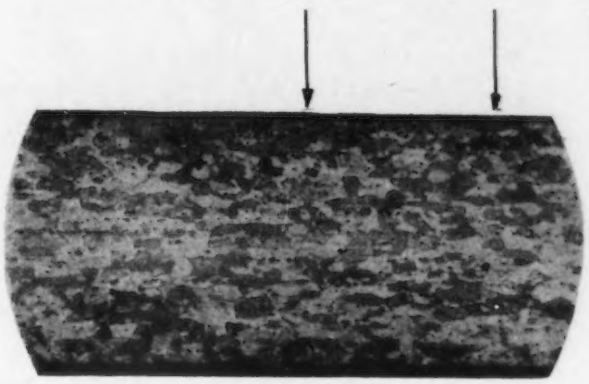
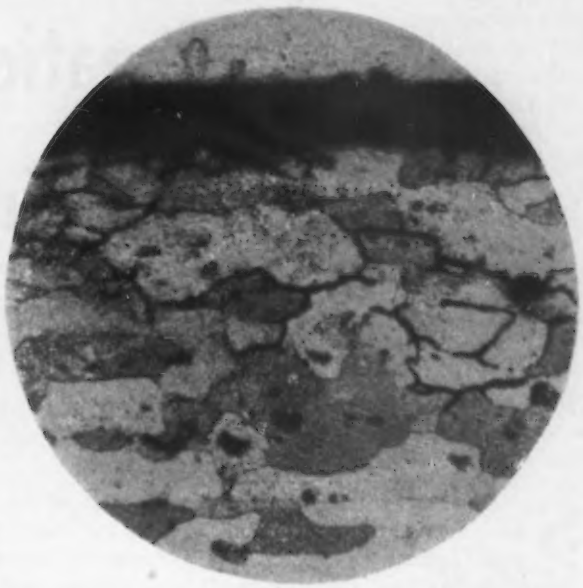


FIG. 7—Microstructure of the 28-Swg cross-brace showing several areas of intercrystalline corrosion. Magnification at left, 100X; at the right, the intercrystalline corrosion is shown at a magnification of 500X.

Intercrystalline Corrosion





cross-brace section and the rivet compared favorably with that of duralumin sheet and rod produced at the present time.

The 28 Swg section showed several areas of intercrystalline corrosion; although the other two sections were unaffected. All three sections were, however, attacked by the RAE reagent. It is considered that this susceptibility to intercrystalline corrosion is due to delays in quenching the section from the solution heat treatment temperature of 923°F. In view of the fact that this Zeppelin was operating in a marine atmosphere, the susceptibility to this type of corrosion may have weakened the framework to such an extent that it may have disintegrated while meeting severe weather conditions in flight.

The *Mayfly* alloy proved to be of the true duralumin-type, although it was made about two years before the discovery of its age hardening properties. It was therefore incorporated in the structure in the as-rolled condition, when its mechanical properties would be most variable and unpredictable.

The metallurgical quality of the alloy was very poor, the section examined showing excessive segregation of the intermetallic compounds, together with the presence of a large number of blowholes and other discontinuities. In fact from the examination of this alloy there would appear to be some grounds for the doubts and suspicions with which these early aluminum alloys were viewed by contemporary aeronautical engineers. An interesting comment on these materials is given by Grey[5] as late as 1916, when he refers to aluminum alloys as "electrified dirt."

[5] C. G. Grey, *The Aeroplane*, Nov. 1, 1916, p. 792 (Supplement 11).

In addition, as the age hardening process had not been discovered, the alloy was incorporated into the airship in a condition when it showed its greatest susceptibility to intercrystalline corrosion. The incidence of this type of corrosion might have weakened the framework to a disastrous extent if the ship had been a success, as it would have been in operation for most of its time in a marine atmosphere.

It is of interest to note that if the structural members of the framework had been solution heat treated and aged before incorporation into the ship, the tensile and 0.1 pct proof stresses of the alloy would probably have been increased by about 25 pct and with this extra strength the disaster might never have occurred.

Table IV

Age-Hardening Properties of the Zeppelin Alloys at Room Temperature

Aging Time	Vpn at 5-Kg Load		
	Longitudinal, Pct	Cross-Brace, Pct	Rivet, Pct
As quenched	78.0	64.0	72.1
15 min	81.1	68.3	75.6
30 min	82.8	71.1	78.9
45 min	83.6	72.6	80.3
1.00 hr	84.5	74.7	82.6
1.50 hr	90.3	80.9	87.4
2.00 hr	94.1	87.4	92.2
2.50 hr	98.8	92.6	96.9
3.00 hr	103.0	96.5	100.6
3.50 hr	105.3	100.8	103.7
4.00 hr	107.6	104.5	105.3
5.00 hr	110.2	108.8	108.8
6.00 hr	113.1	109.6	112.4
7.00 hr	115.4	113.9	115.8
8.00 hr	117.0	116.0	118.0
12.00 hr	120.0	120.0	121.0
1 day	123.0	122.0	124.0
2 days	125.0	124.0	126.0
3 days	126.0	125.0	126.0
4 days	126.0	125.0	127.0
5 days	127.0	126.0	128.0
6 days	128.0	126.0	129.0
10 days	128.0	126.0	129.0

The three German alloys proved to be of normal Wilm duralumin-type with the exception of a higher iron content than was usual. The three alloys had been solution heat treated and aged in accordance with modern practice.

The metallurgical quality of the 18 Swg channel section from the main longitudinal girder was very poor. The section examined showed excessive segregation of the intermetallic compounds, and the presence of two large seams. The quality of the 28 Swg cross-brace and the rivet compared well with duralumin by modern methods.

Several areas of intercrystalline corrosion were found in the 28 Swg section, and all the alloys were attacked by the RAE reagent. This was considered to be due to delays in quenching the alloys after solution heat treatment, as all three alloys showed no signs of susceptibility to this type of corrosion after correct heat treatment. As in the case of the *Mayfly* the incidence of this type of corrosion due to operation in a marine atmosphere might have ultimately had a disastrous effect on the strength of the Zeppelin framework.

In conclusion, it can be stated that the metallurgical quality of the *Mayfly* alloy was very poor, due primarily to bad conditions of melting and casting. While a great improvement in quality is shown by the Zeppelin alloys, one section still showed the presence of defects originating in the ingot. This would appear to indicate that conditions of melting and casting, even after several years of large scale production of these alloys, were not fully under control with regard to the prevention of blowholes and excessive segregation.

Automatic Roto Shaving For Fine Surfaces

By WALTER PRAEG
Chief Engineer,
National Broach & Machine Co.,
Detroit

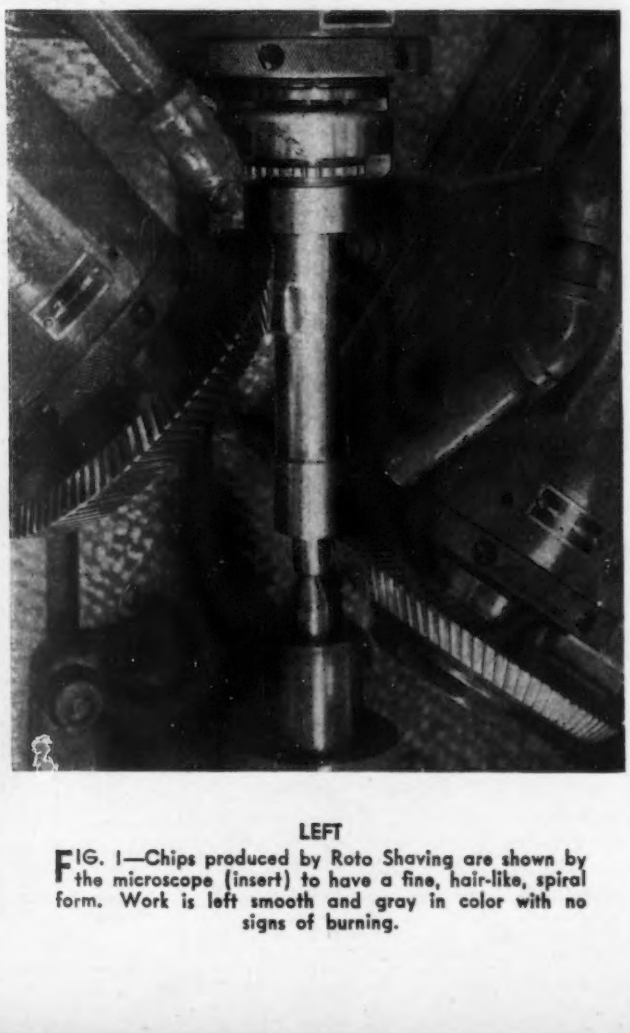
SOME years ago a new machining process, known as Rotomilling, was introduced by National Broach & Machine Co. Designed to replace conventional turning operations, the method consisted of rotating the work in between one or more pairs of milling cutters. Great accuracy and speed of production were obtained, and the process found wide acceptance in the mass-production industries.

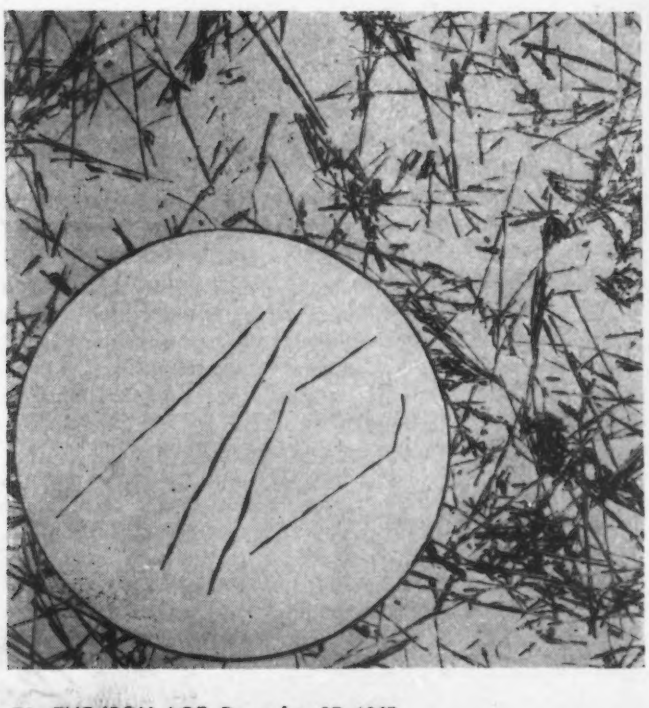
More recently, National Broach announced another new process, a logical outcome of Rotomilling, known as Roto Shaving. The first equipment was large and expensive, and in consequence, its application was limited. It was, however, employed successfully by one of the largest manufacturers in the automobile industry. In the interim, many improvements were made in the process, in the design of the cutters, and in its application to large, mass-production operations. Much of the knowledge now at hand is the result of work done during the war in the solution of innumerable problems incident to the manufacture of parts for military equipment, and today's equipment is compact, reasonably priced, and highly efficient. Similar in principle to the already well-established gear shaving process, it is designed for finish machining operations on all kinds of cylindrical, flanged, and conical parts. The cutters used are similar in appearance to specially formed, fine-pitch milling cutters, the number of cutters being determined by the number of surfaces to be finished in one setting, and these produce fine spiral, hair-like chips as shown in the illustration, fig. 1. The cutters and work both rotate, as in grinding. With a stock removal of 0.010 in. on flanges, or 0.020 in. on diameters, rough machined parts may be finished to grinding tolerances with a fine smooth surface at least equivalent to that obtained in green grinding, the cost being quite low.

A typical example of work per-

RIGHT

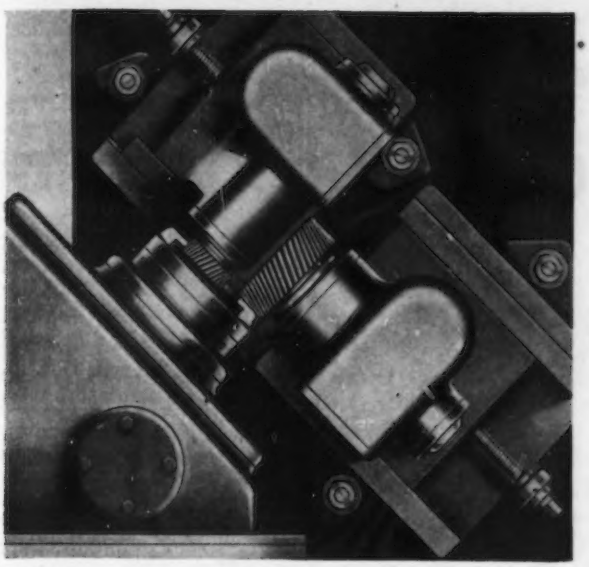
FIG. 2—An automoblie transmission clutch gear set up for Roto Shaving on two diameters and adjacent shoulders for accurate location on the gear cutter.





LEFT

FIG. 1—Chips produced by Roto Shaving are shown by the microscope (insert) to have a fine, hair-like, spiral form. Work is left smooth and gray in color with no signs of burning.



o o o

LEFT

FIG. 3 — Finishing the bore and back face of a ring gear in a single operation. The work piece is sectioned to show the location of the inside cutter.

o o o

o o o

RIGHT

FIG. 4—An example of multiple-operation shaving is seen in this piece which is finished on four diameters and two shoulders by the use of four cutters.

o o o

formed by this process is shown in fig. 2, in which an automobile transmission clutch gear is Roto Shaved for gear cutting location. The 1 9/16-in. diam bearing and its adjacent face, and the 11/16-in. diam pilot and its shoulder face are finished simultaneously. The stock removal is 0.020 in. on each diam and 0.010 to 0.015 in. on each face. Accuracy is held to within 0.001 in. on diameters and faces, and production is at the rate of 180 pieces per hr. Fig. 3 shows a rear axle ring gear blank set up for shaving with two cutters. One cutter finishes the bore while the other finishes the back face, thus eliminating the usual internal grinding, or broaching, and backface grinding operations, and assuring absolute squareness of the bore with the face.

The number of faces that can be finished at one time depends only on the number of cutters that can be assembled and, if necessary, specially formed cutters can be made up for multiple diameter work. An example of multiple operations is shown in fig. 4, in which a ring gear pinion is finished on the spline diameter, on two bearing diameters and one adjacent shoulder, and on the pilot and adjacent shoulder by means of four cutters. The total time for the entire operation is only 20 sec.

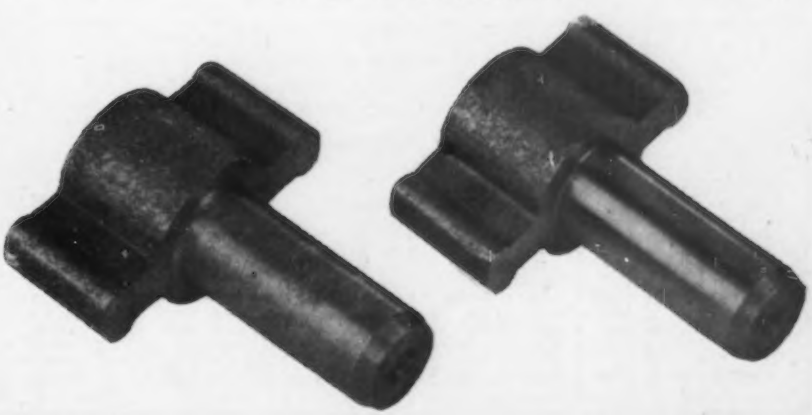
The quality of finish obtainable by Roto Shaving is well illustrated in fig. 5, which shows a wing shaft for a double-acting shock absorber. The OD of the shaft, and the wing face, are finished in one operation at the rate of three pieces per min, and the surface finish and dimensional tolerances are such that grinding is eliminated altogether.

These are but a few examples out of the many which are peculiarly adaptable for surface shaving. The process lends itself to an almost infinite variety of combinations and simultaneously shaving a diameter with adjacent shoulders, or a bore with adjacent face square. That this can be done is due to the use of cutters which may be mounted angularly with respect to the work.

The machine cycle is fully automatic. After the part is loaded the operator presses a single starter button, and the cutter slides advance rapidly to the work. The pre-selected cutting feed is then applied automatically for almost the full depth of cut. The final few thousandths are finished at a lower rate of feed, and there is a short dwell for maintaining size and finish before the slides return to the open position for unloading the work. Machines may be made up as single-spindle units, or combined into special multiple-spindle arrangements.

o o o

FIG. 5—Shock absorber part after rough turning and after finish Roto Shaving at the rate of three pieces per min.



◆ ◆ ◆ Weldability Factors for 18

IN the oxyacetylene and atomic hydrogen welding of 18-8 stainless steel a frequent complaint from welders and their foremen is that some heats of steel are much more difficult to weld than others. In the manufacture of products such as aircraft exhaust manifolds, where oxyacetylene welding represents a very large portion of the total manufacturing cost, losses due to poor welding properties of some heats of steel may become quite serious.

A company laboratory which is in the habit of going through the routine of checking materials for compliance with the government specifications, easily drifts into the habit of discounting these complaints after it has been demonstrated that the material in question complies with the Army-Navy specifications. However, it has been demonstrated repeatedly by welders that some lots of stabilized stainless steel could be welded at speeds more than three times as fast as the maximum welding speed for another lot of the same type.

As it would be of considerable value to any fabricator to be able to obtain stainless steels all heats of which had as good welding properties as the best heats heretofore seen in the shop, an attempt to correlate these welding properties with chemical composition and any other controllable factors was indicated.

In the investigations which followed, 208 heats of Type 321 titanium-stabilized stainless steel and 36 heats of Type 347 columbium-stabilized stainless steel were rated as to their relative weldability and these results correlated against the chemical composition and other data. The results of this investigation indicate that the cost of welding stabilized stainless steels using oxyacetylene or atomic hydrogen may be materially decreased by slight changes in the chemical composition within existing specifications.

It is admitted that the application of the term "weldability" to austenitic stainless steels which show no quench hardening is not in accordance with the most widely used sense of this term. However, no other term seems to describe adequately the property in question.

In order to have a scale for judgment of the relative speeds with which various stabilized stainless steels may be welded, a numerical index scale has been established rating the weldability of these steels from 0 to 5. A separate evaluation must be made for each type of welding and it is quite possible that one steel might have a number of weldability indices: for instance, a weldability index of 3 with oxyacetylene welding, a weldability index of 2 with atomic hydrogen welding and a weldability index of 5 with helium or argon shielded arc welding. The weldability index may also vary with the type of flux used on fluxed seams.

It is understood that the maximum speed at which welding can be done depends upon torch adjustment and the skill of the operator, as well as the chemical composition and the preparation of the joint. The weldability tests in the case of oxyacetylene welding were performed with a neutral or very slightly reducing flame and with the optimum amount of heat input for the particular speed at which the metal was being checked. Clean, scale-free material was used and all other welding conditions, such as the height of the flame above the metal, were those generally considered to be the best practices. In general, weldability is rated on the basis of the net production per eight-hour day by a welder of better than average ability with the usual utilization of his time.

A weldability index of 0 indicates a stainless steel which is impractical to weld at any speed: it shows crows feet and porosity such as pin holes and worm holes at the lowest speed at which the fire is hot enough to melt the metal.

TABLE I

Composition Correlation Groups

AISI Type 321 (18-8-Titanium) Stainless Steel

	Group I	Group II	Group III	Group IV	Group V
Ti	0 to 0.41	0.42 to 0.46	0.47 to 0.58	0.59 to 0.66	0.67 and up
C	0 to 0.052	0.053 to 0.062	0.063 to 0.081	0.082 to 0.092	0.093 to 0.1
Mn	0.2 to 1.18	1.19 to 1.26	1.27 to 1.39	1.4 to 1.55	1.55 to 2.5
P	0 to 0.013	0.014 to 0.017	0.018 to 0.025	0.026 to 0.031	0.032 to 0.04
S	0 to 0.0054	0.0055 to 0.0086	0.0087 to 0.0169	0.017 to 0.0199	0.02 to 0.04
Si	0.2 to 0.33	0.34 to 0.41	0.42 to 0.56	0.57 to 0.7	0.71 to 1.5
Ni	7.0 to 9.8	9.81 to 10.18	10.19 to 10.47	10.48 to 10.79	10.80 and up
Cr	17.0 to 17.27	17.28 to 17.61	17.62 to 17.97	17.98 to 18.41	18.42 and up
Al	0 to 0.08	0.09 to 0.14	0.15 to 0.17	0.18 to 0.22	0.23 and up
Ti/C	4.0 to 6.0	6.1 to 7.2	7.3 to 8.6	8.8 to 10.0	10.1 and up
Cr/Ni	0 to 1.71	1.72 to 1.77	1.78 to 1.91	1.92 to 2.03	2.04 and up

TABLE II

Composition Correlation Groups

AISI Type 347 (18-8-Columbium) Stainless Steel

	Group I	Group II	Group III	Group IV	Group V
Cb	0 to 0.65	0.66 to 0.78	0.79 to 0.94	0.95 to 1.08	1.09 and up
C	0 to 0.047	0.048 to 0.058	0.059 to 0.077	0.078 to 0.094	0.095 to .1
Mn	0.2 to 1.18	1.19 to 1.32	1.33 to 1.67	1.68 to 1.86	1.87 to 2.5
P	0 to 0.012	0.013 to 0.017	0.018 to 0.024	0.0 5 to 0.031	0.032 to .04
S	0 to 0.0057	0.0058 to 0.0086	0.0087 to 0.0136	0.0137 to 0.0189	0.019 to .04
Si	0.2 to 0.27	0.28 to 0.4	0.41 to 0.54	0.55 to 0.64	0.65 to 1.5
Ni	7.0 to 9.97	9.98 to 10.7	10.71 to 11.19	11.2 to 11.49	11.5 and up
Cr	17.0 to 17.38	17.39 to 17.69	17.7 to 17.99	18.0 to 18.51	18.52 and up
Cb/C	8.0 to 9.8	9.9 to 10.8	10.9 to 12.8	12.9 to 14.3	14.4 and up
Cr/Ni	0 to 1.55	1.56 to 1.65	1.66 to 1.72	1.73 to 1.91	1.92 and up

18-8 Stainless ◆ ◆ ◆

By Franklin H. Page, Jr.
Manager, Factory Laboratory, Solar Aircraft Co., San Diego

. . . Different heats of stabilized 18-8 stainless steel show wide differences in weldability even though complying with government specifications as regards chemical composition. In this article, which was prepared originally for the 1945 AWS "Convention by mail," the author discusses the effects of slight variations in the percentages of silicon, manganese, and other elements. By decreasing the percentage of steels with a low weldability index through slight changes in chemical composition within existing specifications, welding costs may be materially reduced.

Weldability index of 1: Weldable only at very slow speeds. The average production welder can achieve about 400 in. per day (on a butt weld with 0.050-in. material) without very much difficulty on this material. An unusually skillful welder could net 600 in. per day, but with considerable difficulty and much hard work in that he would have to stir out unusually great quantities of gas. Even with the most skillful welder, pin holes and crows feet would result from a 600-in. per-day speed.

Weldability index of 2: Approximately equivalent to the average Type 321 stainless steel currently available. The average welder could be expected to net about 600 to 700 in. per day, though with much hard work he might produce 800 in. with a considerable amount of porosity and pin holes. A good welder with very hard work could produce approximately 1000 in. per day though with quite a bit of trouble from crows feet and pin holes.

Weldability index of 3: The average welder can produce from 800 to 1000 in. per day without much difficulty and a good welder can produce 1200 in. per day or better, with no crows feet or pin holes.

Weldability index of 4: A good welder can make about 1400 in. per day with no trouble at all and no pin holes or other porosity. The average welder could net 1000 to 1200 in. per day if supervision were to speed him up and if all steel used rated 4 or better, so that he would get into the habit of welding at this speed.

Weldability index of 5: This weldability rating is the present goal in improving the weldability of sheet stainless steel and is limited only by the ability of the welder to move along on the particular thickness on which he is working. A welder of unusual skill could produce 1600 in. per day without much difficulty. The average welder of limited experience could produce 1600 in. per day if supervision were to teach him to move at this speed and if he always had steel with a weldability index of 5 so that he could develop the habit of moving at this speed.

It has been found most useful to evaluate the steels by having them welded by one or more skilled operators of supervisory grade who are familiar with production welding problems and are able to estimate how much production a welder could turn out with a particular set of welding conditions. They are instructed not to attempt to assign fractional index numbers but the nearest full number. It is admitted that this is a quite subjective way of judging welding performance but it is demonstrated that the weldability numbers assigned by the various operators trained in this work correlate with each other.

Chemical Correlation Groups

For the purpose of correlating chemical composition and weldability, a statistical analysis of the distribution of percentages of each element and of certain element ratios was made on several hundred tests each of Type 321 and Type 347 stainless steel. On the basis of these statistical analyses five correlation groups were set up for each element and element ratio in each of the two types of stabilized stainless steel.

Ten pct of the samples are in group I, representing the smallest amount of the element: 25 pct of the samples are in group II, representing the next larger amount of the element; 30 pct in group III, in the middle of the range; 25 pct in group IV, next greater than group III; and 10 pct in group V, the samples containing the largest amount of the particular element. The limits of these groups, in terms of the element content in the

TABLE III

Correlation of Average Weldability Indices with Composition Groups
Type 321 (18-8-Titanium) Stainless Steel
Oxyacetylene Welding, Solar 16GH Flux
(Figures tabulated are the average weldabilities obtained on samples for this group

	Group I	Group II	Group III	Group IV	Group V
Ti	1.57	1.44	1.66	1.82	*
C	1.44	1.73	1.62	2.06	*
Mn	1.84	1.58	1.61	1.56	2.53
P	*	1.86	1.60	1.79	*
S	*	1.80	1.55	*	*
Si	0.75	1.10	1.61	2.80	2.54
Ni	1.74	1.52	1.56	1.94	*
Cr	*	1.53	1.89	1.42	1.80
Al	1.83	1.6u	1.94	1.60	1.75
Ti/C	1.40	1.41	1.67	1.69	1.54
Cr/Ni	1.84	1.61	1.51	1.70	*

* Too few samples of this group were taken to present a valid correlation.

TABLE IV

Correlation of Average Weldability Indices with Composition Groups
Type 347 (18-8-Columbium) Stainless Steel
Oxyacetylene Welding, Solar 16GH Flux

(Figures tabulated are the average weldabilities obtained on samples for this group)

	Group I	Group II	Group III	Group IV	Group V
Cb	*	1.83	1.58	2.00	*
C	*	1.57	2.00	*	*
Mn	*	*	2.00	*	*
P	*	1.75	1.40	*	*
S	*	*	1.64	*	*
Si	1.00	1.29	1.71	2.00	3.00
Ni	2.67	1.75	1.50	*	*
Cr	*	*	1.40	1.85	2.13
Cb/C	2.25	2.00	1.80	1.80	1.50
Cr/Ni	1.33	1.37	2.00	2.00	*

* Too few samples of this group were taken to present a valid correlation.

samples, are shown in tables I and II.

As an example of the application of these correlation groups we can assume a hypothetical stainless steel heat containing 0.078 pct carbon, therefore being in carbon correlation group III; containing 0.018 pct sulfur, correlation group IV; 0.026 pct phosphorus, correlation group IV; 0.36 pct silicon, correlation group II; 1.29 pct manganese, correlation group III; 18.31 pct chromium, correlation group V; 9.90 pct nickel, correlation group II; 0.44 pct titanium, correlation group II; with a titanium-to-carbon ratio of 5.55, therefore in the titanium-carbon group I; with a chromium-nickel ratio 1.85, group III.

Weldability indices for oxyacetylene welding were assigned to 208 heats of Type 321 titanium-stabilized stainless steel and 36 heats of Type 347 columbium-stabilized stainless steel. Flange-edged type preparation was used on these specimens in order that the welds could be made without dilution of the weld metal by addition of filler rod. This method is frequently used on the production welding of stainless steel stampings. In this method a flange approximately 1/16-in. high is turned up on the edge of the specimen and is melted down in the welding operation. The metal was fluxed with Solar type 16GH welding flux. It was demonstrated that the type of flux used has a considerable effect on the speed at which the material could be welded and therefore on the weldability index. This flux was standardized so as to have all results comparable.

The weldability of a smaller number of specimens was determined using atomic hydrogen and argon shielded gas welding. The results with oxyacetylene were correlated with the various element groups by averaging the weldability numbers of all samples falling within each element correlation group. These results are tabulated in tables No. III and IV. The reason for including the stabilizing element-to-carbon ratio, and the chromium-to-nickel ratio, is that these ratios are suspected of having an effect upon the forming properties of stainless steel sheet and sometime possibly may be specified.

An additional correlation was made with the manufacturers of the steel. This data is tabulated in tables V and VI. The manufacturers represented here melt and roll most of the tonnage of stainless steel sheet produced in the United States. Further examination of the differences in weldability of stainless steel furnished by various manufacturers demonstrated that these differences were due only to the ranges of the silicon and manganese content which they habitually provided in their products, although all materials checked complied with Army-Navy Aeronautical Specification AN-QQ-S-757. The higher silicon and higher manganese products of manufacturers C and E were equal to any material produced by manufacturers A and G.

TABLE VII

Probable Improvement of Weldability Index with Suggested Specification Changes Type 321 (18-8-Titanium) Stabilized Stainless Steel. Oxyacetylene Welding, Solar 16GH Flux

(All Type 321 to conform to AN-QQ-S-757, Army-Navy Aeronautical Specification, in addition to requirements of this table.)

Suggested Specification Minimums	Average Weldability Index	Pct of Samples Meeting Specification	Pct of Heats Meeting Specification Which Have Weldability Indexes of 1 or 0
As now furnished	1.63	100	44
0.50 pct Si	2.35	51	18
0.60 pct Si	2.3	32	10
0.60 pct Si 1.25 pct Mn	2.3	23	5

It will be noted on examination of the data on tables III and IV that the most important element as far as effect upon weldability is concerned is silicon. Manganese and titanium seem to have a lesser effect and the other elements practically no effect at all in their usual ranges. As a means for improving the welding properties of stabilized stainless steel sheet the author's company has informed its sources of steel that it intends to specify a minimum silicon content of 0.50 pct in the near future and possibly minimums of 0.60 pct silicon and 1.25 pct manganese, the composition of the steel to remain within the limits specified by Army-Navy Aeronautical Specification AN-QQ-S-757.

Probably more important than obtaining an increase in the average weldability index of all stainless steel available is the decrease in the percentage of those steels showing a weldability of 1 or below. A welder of average skill has a tendency to develop the habit of welding at the production rate available with the slowest steel which he is likely to encounter. It is, therefore, more important that the slowest steel which he is likely to encounter have as fast a welding rate as possible, rather than to have the average raised by a few steels of exceptional weldability. Table VII shows the expected weldability with the specifications which are suggested above. It is noted that the increase in the weldability index is significant and that the final specification suggested will eliminate all but a very small proportion of the samples with low weldability, allowing the welders to develop a habit of moving at a considerably more rapid rate.

That this specification is practical is shown by a survey which indicated that 23 pct of all titanium-stabilized stainless steel now being melted has 0.60 pct or more silicon and 1.25 pct or more manganese. An investigation seems to indicate that putting these limits on silicon and manganese will not affect the forming properties of the steel.

Effect of Si and Mn

The primary difficulty with those heats of stainless steel which show poor weldability is the evolution of gas on the cooling side of the weld puddle. This gas seems to be evolved either at the moment of solidification

TABLE V

Correlation of Steel Manufacturer with Weldability of Type 321 (18-8-Titanium) Stainless Steel

Manufacturer (code letter)	Average weldability of manufacturer's product
A	2.30
B	Not enough samples for valid average
C	1.65
D	Not enough samples for valid average
E	1.14
F	Not enough samples for valid average
G	2.46

or immediately preceding it. The amount of gas evolved and the ease with which it is eliminated from the steel seem to be the controlling factors in limiting the speed at which the material may be welded in production. It is assumed for the purpose of this article that any gas porosity represents an unacceptable defect and that the finished weld must be free of worm holes and pin holes. The weldability index number is based upon the limiting speed at which this material may be welded with optimum torch adjustment without obtaining any gas porosity, by certified aircraft welders with approximately 3 yr experience of welding stainless steel.

The ease with which the gas is evolved depends upon the nature of the slag on top of the puddle. In the case of some samples which formed a very heavy slag, the gas was evolved relatively easily, and with other samples which had a very thin slag the gas got through only with difficulty. It is believed that possibly part of the beneficial effect of manganese is an alteration in the form of the slag to enable the gas to be more readily eliminated.

No attempt has been made by the author to analyze the minute quantity of gases which the solidifying metal gives off. It is thought that their behavior may be due partially to the solubility of hydrogen in the liquid metal, hydrogen in its most active form being available in the inner portions of the oxyacetylene flame and also in the atomic hydrogen welding arc. However, it is assumed that the major source of this gas is the evolution of carbon monoxide from the reaction of the metallic oxides and carbides in the metal. Metallic oxides are formed in the welding operation from oxidation ahead of the torch or may be introduced from sloppily made tack welds or from the oxidizing zones of the flame. Excessive gas trouble may be encountered if the hot filler rod is taken out of the protective flame and allowed to be oxidized by the air and then applied to the weld. It is assumed that the extreme effectiveness of silicon in decreasing the amount of gas trouble encountered may be due to its action as a de-oxidizer and slagging element, and preventing these oxides from reacting with carbon to form carbon monoxide. A recent article* by Morton C. Smith of the Dept. of Metallurgy of Montana School of Mines, clearly describes the reactions which produce carbon monoxide in welding operations.

*"*Gas Evolution in Arc Welding Steels and Its Effects Upon the Welding Process*," in "The Welding Journal," April 1945, Vol. 24, No. 4.*

A small number of samples of both type 321 and type 347 stainless steel were welded using the atomic hydrogen welding process. The number of samples was too small for presentation of the same type of correlations shown for oxyacetylene welding. However, they clearly indicate that a minimum of 0.50 pct silicon is necessary for satisfactory welding properties.

Another group of samples was tested for the effect of composition on helium and argon shielded arc welding. Very little or no correlation was found between welding properties and variations in the chemical content within the specification limits. There was one exception: where burned tack welds existed, it was found that they could be picked up much more easily on the samples containing 0.50 pct silicon or more.

TABLE VI

Correlation of Steel Manufacturer with Weldability of Type 347 (18-8-Columbium) Stainless Steel

Manufacturer (code letter)	Average weldability of manufacturer's product
A	Not enough samples for valid average
B	Not enough samples for valid average
C	2.25
D	Not enough samples for valid average
E	1.33
F	Not enough samples for valid average
G	Not enough samples for valid average

TABLE VIII

Probable Improvement of Weldability Index with Suggested Specification Changes Type 347 (18-8-Columbium) Stabilized Stainless Steel. Oxyacetylene Welding, Solar 16GH Flux

(All Type 347 to conform to AN-QQ-S-757, Army-Navy Aeronautical Specification, in addition to requirements of this table.)

Suggested Specification Minimums	Average Weldability Index	Pct of Samples Meeting Specification	Pct of Heats Meeting Specification Which Have Weldability Indexes of 1 or 0
As now furnished	1.86	100	35
0.50 pct Si	2.43	35	*
0.60 pct Si	*	*	*
0.60 pct Si 1.25 pct Mn	*	*	*

* Not enough samples for valid average.

Quite naturally, some welders who have experience with welding only one of the two types of stabilized stainless steel are strongly prejudiced in favor of the type they are accustomed to using. A contributing factor may be that slight differences in flame adjustment produce unlike results in making welds on the two types of material. For instance, the use of a little too much excess acetylene (a common production welder's practice requiring careful instruction and frequent checkup by supervision) will result in the loss of some of the stabilizing effect due to carbon picked up from the excess acetylene.

In welding columbium-stabilized material, this excess acetylene does slightly decrease the amount of gas evolved and, therefore, it is a very natural error on the part of the welder. However, in welding titanium-stabilized material the same slight excess of acetylene causes an increase in the amount of gas encountered. Titanium stainless may be welded without too much difficulty using a very slight excess of oxygen although this is not good practice as it may result in loss of titanium; however, it will be almost impossible to make a good weld on columbium stainless using the same slight excess of oxygen.

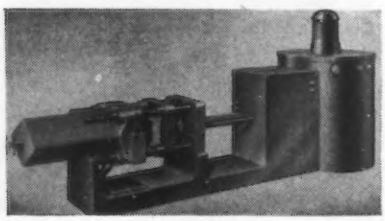
Both materials may be welded without carbon pickup and without loss of the stabilizing element using an exactly neutral flame or one carrying such a slight excess of acetylene that the "feather" or intermediate flame cone in between 1/32-in. and 1/64-in. long. If the silicon and manganese content are as suggested here, there is very little to choose between the two types of steel with respect to welding properties.

New Equipment . . .

Presses

. . . In this week's issue are described interesting developments in presses, including hydraulic presses, plate duplicators, combination presses, hydraulic cylinder calculators, die cushions, punch presses, and several other types.

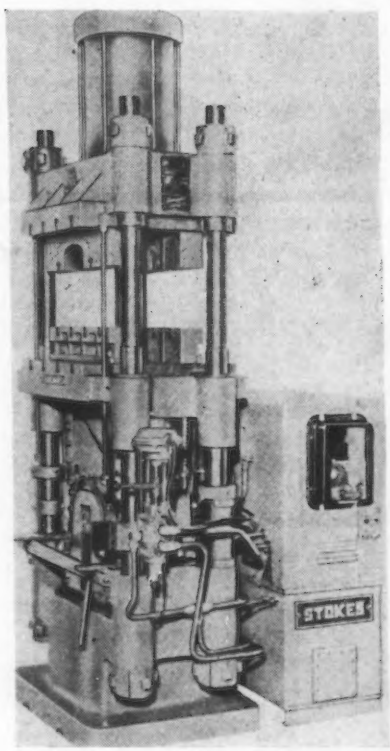
THE third of four new die casting machines comprising the line of package plan equipments has been announced by the *H. L. Harvill Mfg. Co.*, Los Angeles. The third in the



series, known as the HDO, has been developed for high pressure casting of aluminum, magnesium and zinc alloys. The output of the machine is claimed to be high for this type of cold chamber equipment, the maximum number of cycles, or shots per hr being somewhat dependent upon the ability of the operator to ladle the metal at a consistent rate of speed. Under typical production conditions the machine has averaged 300 shots per hr. These machines are equipped with electric timers and limit switches for fully automatic control, or, at the option of the operator, may be operated semi-automatic or controlled manually.

Combination Press

A COMBINATION press, for either compression or transfer molding, has been announced by *The F. J. Stokes Machine Co.*, Philadelphia 20. By using a single pumping unit, for applying pressure in compression molding and to lock the mold shut and supply hydraulic pressure to the transfer ram, it is stated that a highly-efficient, readily-converted, dual-purpose press becomes available. It is claimed the power unit has greater capacity than in the usual compression press, to provide the high mold closing speed and the high ram speed to work most efficiently with induction or electronically-heated performs in transfer molding. Advantages of this type of press for transfer molding are stated as: rapid, positive toggle action for closing and locking mold shut; elimination of the usual



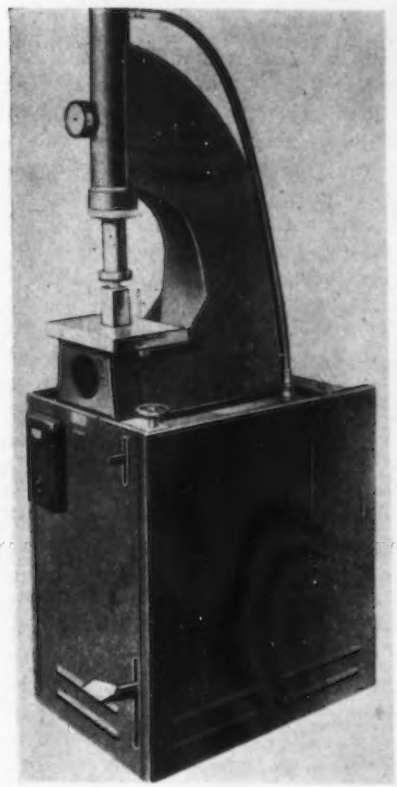
pot with heavy sprue and waste; low hydraulic pressure and consequent low maintenance cost, and of completely self-contained press with only one pumping unit and no floating platen necessary. By simply closing a valve the machine becomes a straight compression press.

Hydraulic Press

A WIDE variety of pressing, straightening, bending, flattening, assembling and other operations can be performed on the 25-ton hydraulic press announced by the *Mech-Art Products Corp.*, York, Pa. The press is said to be self-contained, and can be located in the most convenient place and moved about at will. Power is applied by hand operation and eight strokes of the pump equal 1 in. of ram travel which is claimed to result in fast press action. The press cylinder is a steel casting of maximum strength. The table is supported by two alloy steel pins which rest in four inverted V-bearings, and handle grips at end of table make possible immediate adjustment in the height of the table, to handle various size work.

Hydraulic Presses

AN interesting and extremely versatile line of positive self-contained hydraulic presses adaptable to all sizes and types of shops has been announced by *Munton Mfg. Co.*, Franklin Park, Ill. They are available with self-contained motor drive for production work, foot operation,



either mounted with bottom of press open or flush as illustrated. These presses are being used for operations such as push-broaching, forming, blanking, drawing squeeze assembly of bushings, straightening, shot-pushing, and numerous other operations. They are said to be rugged in construction, heavily reinforced where needed, gap type to facilitate work clearance, and with finely engineered rams. These presses are not only used in metal and wood working plants, but also in food packing and other plants as well.

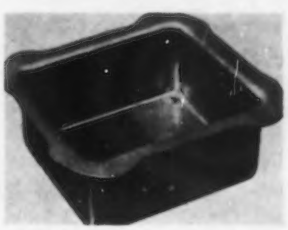
Plate Duplicator

DESIGNED to punch short runs and irregular shapes with production efficiency, the Thomas Plate Duplicator has been announced by *Thomas Machine Mfg. Co.*, Pittsburgh 23. It was developed, it is claimed, to overcome such wasteful practices as hand marking, hand positioning, and use of two or three machines where coping, notching or different size holes are required. This machine is said to meet universal shop need for rapid, accurate duplication of holes, notches, coping and other operations in plates and panels in runs of two to several thousand. It

is useful where large varieties of plates are handled, because it requires no setting up and can be switched from one type of job to another. Operation is simple, and holes can be punched diagonally or in any direction. As many as 11 tools including round, square and slotting, may be set in the punch, and when shifting from one tool to another, a lever is simply thrown to select the tool wanted.

Drawing Compound

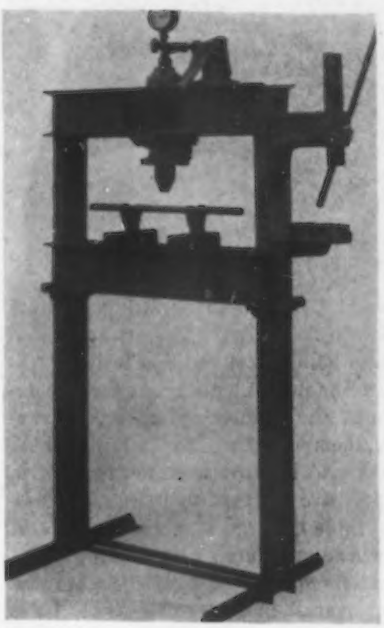
A DRAWING compound that maintains its inherent physical properties during repeated forcible stamping of ferrous and non-ferrous alloys, has been announced by the *Northwest Chemical Co.*, 9310 Roselawn, Detroit 4, and is known as Superdraw. It is said to have a high film strength and does not separate even under intense stresses. The electrical properties of the molecules at the interface, between the lubricant and the metal surfaces remain constant during the drawing operation because of the chemical sta-



bility of this compound. It is unaffected by atmosphere and heat, and leaves no heavy scale nor does it leave any stain on the surface of any alloy. It is easy to apply, by hand, brush, spray, roller, dipping or pouring, and may be extended to suit the draw, diluting with warm water. This compound is made in both pigmented and non-pigmented form.

Hydraulic Press

INCREASED flexibility of use has been provided on its "Junior" hydraulic broaching and assembly presses according to an announcement by *Colonial Broach Co.*, Box 37, Harper Station, Detroit 13, through additional equipment enabling the press to be used interchangeably also for straightening operations. The changeover from assembly or broaching jobs to straightening work is accomplished simply by placing, on the platen of the machine, a self-contained simgle-unit roller type straightening fixture. The machines will be found most useful for straightening



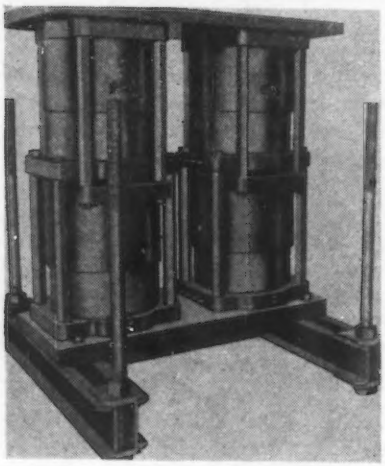
work on small diam parts. While means are provided for solidly bolting the fixture to the platen of this machine, such attachment is usually not necessary since the fixture design provides balanced operating load on the vertical centerline of the machine and fixture. The fixtures are available for all sizes, ranging from one to four tons capacity. Machine operation is hydraulic, with infinitely variable ram speed and pressure controls available if desired.

Hydraulic Cylinder Calculator

A HYDRAULIC cylinder calculator which computes the different factors in hydraulic cylinder application has been announced by *Hanna Engineering Works*, 1765 Elston Avenue, Chicago 22. It gives required values based upon other values in the same scale. Nineteen distinct operations can be performed on its scales including cylinder size, pressure, cylinder speed, etc.

Die Cushions

EXTRA heavy duty pneumatic die cushions, type model 2-CC have been announced by *Dayton Rogers Mfg. Co.*, Minneapolis 7, and are available in cylinder sizes from 6 in. to 24 in. They are said to have a capacity for producing a draw ring holding pressure from six tons to one hundred tons. The hardened and



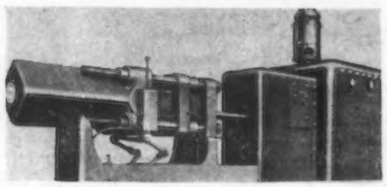
ground pin pressure pad is custom made to fit a given press bed opening, and is held in constant parallel working alignment at all times by the design of the tandem cylinder construction, compensating for all off-center loading. These pnuematic die cushion models are claimed to be particularly adaptable to large straight side presses where maximum ring holding pressure is required in proportion to the total overall press tonnage.

Bellows Die Cushion

A PNEUMATIC die cushion of bellows type design which uses a molded synthetic rubber bellows in place of the conventional type piston cylinder air jack has been announced by *Dayton Rogers Mfg. Co.*, 2835 Twelfth Avenue, S. Minneapolis. The synthetic rubber bellows absorbs the die cushion travel of the hardened and ground pin pressure pad. It is claimed that the molding is not affected by oil in the air line, grease or other drawing compounds. The air cushions are made in sizes from 5 to 12 in. having drawing capacities up to 5 in. and can be used on all deep drawing jobs within their capacity as well as pressure pad control on a large percentage of forming dies including ejector work, etc. Off center loading on the hardened and ground pin pressure pad is compensated for by a heavy-duty pin pressure pad guide stem which also serves as an adjustable feature. This allows the operator to stop the pin pressure pad at a predetermined height, compensating for bolster plate thickness variation and the increase or decrease in the length of the pressure pad pins.

Die Casting Machine

THE fourth basic model of the new line of die casting machines, known as the HDW Series, has been announced by the *H. L. Harvill Mfg. Co.*, Los Angeles. This machine is a heavy duty, high capacity, cold chamber type, with provision made for the addition of a hot chamber furnace and an injection attachment so that the machine also may be used for automatic high speed casting of zinc, tin, or lead alloys. This series of machines is offered in three sizes, with model designations of HD-1W1, HD-2W1 and HD-3W1. They are said to be engineered for high production under adverse conditions, with heavy duty construction throughout. The hydraulic system of these machines provides hydraulic pressures from 200 psi to 1000 psi delivery which may be regulated by the operator of the ma-



chine dependent upon the pressure requirements of the casting to be done. Locking pressure on the dies is automatically compensated for increase and decrease of the injection pressure.

Pressure Detector

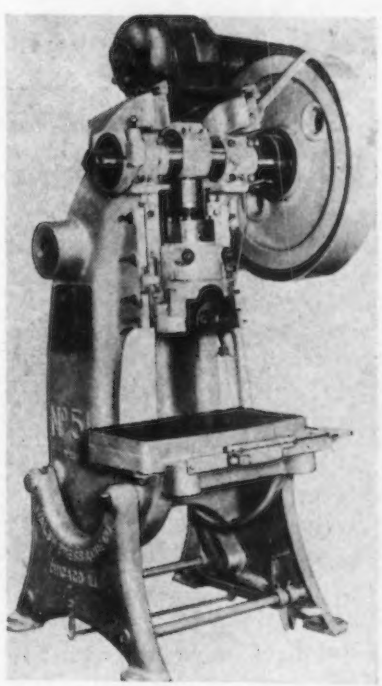
A PRESSURE detector controlling hydraulic pressure and cutting off circuits at predetermined pressures and for controlling surge loads has been developed by *Cook Electric Co.*, 2700 Southport Avenue, Chicago 14. Called the "Hi-Pressure" switch and capable of withstanding 3000-lb. surge load, the switch has a range of adjustment from 100 to 2000 lb with a 20-lb differential at 100-lb pressure which increases proportionately at higher pressures. The electrical capacity of the switch is 10 amp at 125 v ac with either an Amphenol connection or a standard conduit fitting. The pressure connection can be either ⅜ or ⅛-in. standard pipe thread. The switch weighs approximately 2 lb depending upon fittings.

Die Separator

AS an optional feature, a die separator has been added to their portable hydraulic elevating table by *Lyon-Raymond Corp.*, 2292 Madison Street, Greene, N. Y. The separator consists of a tubular superstructure which is fastened to the base of the table by four bolts with wing nuts. The dies are separated by elevating the table top, fastening the top section of the die to the superstructure by means of the chain and then lowering the table top with the bottom section of the die. As the separator is readily demountable the separator does not limit the use of the table which can quickly be made available for such work as the transferring of dies in and out of presses, the support of overhanging materials, and adjustable height assembly bench and many other handling and work positioning tasks.

Punch Presses

A COMPLETE new line of punch presses, ranging in size from 6 to 80 tons capacity, has been announced by *The Walsh Press & Die Div., American Machine & Gage Co.*, Chicago. All sizes are said to feature carefully ground forged steel crank-



shafts, hand scraped bearings, solid web wheels and gears, ready inclinability, adjustable die head, smooth, high speed operation, and a simple yet highly efficient two button safety device for protection of operators.

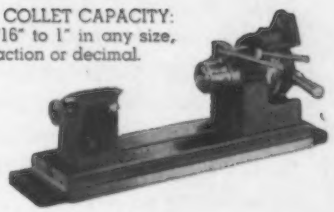
HARDINGE HORIZONTAL-VERTICAL

Collet Index Fixtures with Threaded Nose Spindle are fast in operation and hold work accurately

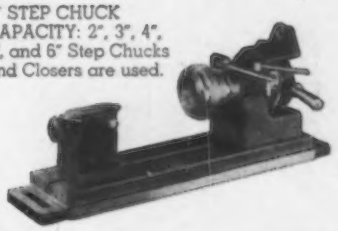
In addition to taking standard collets, this fixture takes step chucks and jaw chucks to cover a wide range of applications. It will eliminate the necessity of your tool room making many specially designed fixtures. Thus, your engineers and tool-makers will have more time for other work.

A preselector arrangement provides the selection of separate indexing of any number divisible into 20 or 24. The collet closer lever has a 100 to 1 leverage for quick opening and closing of collets and step chucks. Write for bulletin.

1" COLLET CAPACITY: 1/16" to 1" in any size, fraction or decimal.



6" STEP CHUCK CAPACITY: 2", 3", 4", 5", and 6" Step Chucks and Closers are used.

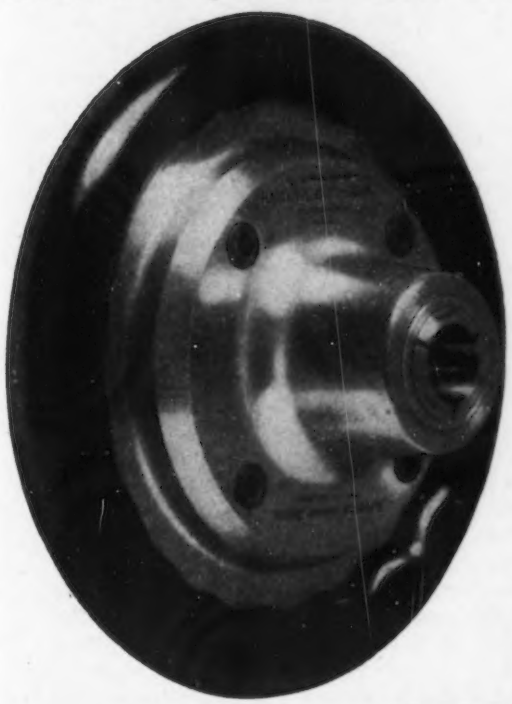


5" JAW CHUCK CAPACITY: Universal and Independent Jaw Chucks have 5" cap.

HARDINGE
ELMIRA, N.Y.

HARDINGE-SJOGREN SPEED COLLET CHUCKS

increase production of your lathes and milling machines



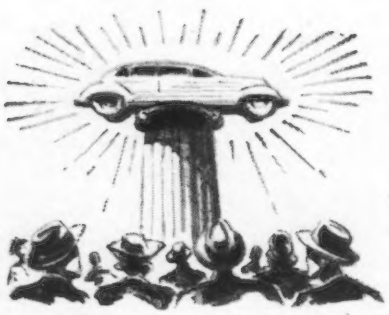
A Hardinge-Sjogren Nose Type Speed Collet Chuck enables you to get full value from your toolroom lathes, engine lathes and milling machines. It gives greater capacity, saves time, increases accuracy and assures better results. An almost effortless turn of the handwheel, one way or the other, automatically opens or closes the collet, releasing or gripping the work as desired. Its grip is adjustable and sure. Production is increased as the operator is always in front of his work. Available in three sizes for 1", 1 3/8", or 1 3/4" collet capacity. Write for complete bulletin.

"PERFORMANCE HAS ESTABLISHED LEADERSHIP FOR HARDINGE"

Assembly Line . . .

STANLEY H. BRAMS

• Viewpoints of labor and management are colliding head-on in the Ford and GM negotiations . . . Company positions demand security and fall far short of pay demands of UAW.



DETROIT—At his most discordant, Stravinsky never wrote music as harsh as the piping against which labor and management are going through their roundelay in the automobile industry. In General Motors, in Ford and in Chrysler the viewpoints of both parties have collided head-on. Until after the Washington fact-finding board listens to the GM case and makes its recommendations—which may or may not be accepted by both parties—there is little hope of arrival at a formula which will permit sustained production during 1946.

Having canceled its contract with the United Auto Workers Union of the CIO, General Motors has now offered 11 proposed contract revisions which the union is considering and will act on after the Washington hearings end. They were not nearly as severe as the union had anticipated, and accordingly the position of Walter Reuther, who said the union would take a long time before it acted on them, is probably being modified. Meanwhile, Ford has filed its detailed proposals for company security, and these are subjects of continuous discussion in the negotiations. The Chrysler bargaining is stalled in dead center, and the only reason that company is not on strike today is because the GM Div. walked out first.

In both the General Motors and the Ford proposals, management prerogatives figure importantly. GM wants to include in its contract the declarations that wages, hours of employment and other conditions of employment are the only matters subject to collective bargaining, that products to be manufactured, plant locations, manufacturing schedules, methods, processes and means of manufacturing, the right to hire, promote, transfer, discharge or discipline for cause, and to maintain discipline and efficiency of employees are the sole responsibility of the corporation. Similarly Ford wants it stated that the company retains the sole right to hire, lay off, assign, transfer and promote employees, and to determine hours of work. The Ford Magna Charta of its rights also mentions its prerogative to discipline and discharge for cause, to promote as it sees fit, determine, maintain and enforce standards of production, to make reasonable rules and regulations for work, to decide when and where overtime should be worked, and to be the exclusive functionary where true management rights are involved.

Both companies would penalize recalcitrant workers who participate in strikes, but the General Motors provisos are more moderate. GM simply demands that "there be appropriate penalties, including loss of seniority," against employees taking part in work stoppages in violation of the agreement. Ford now proposes that wildcat strikers who lead such outbursts shall be subject to discharge, and employees who follow them in their actions shall be fined $1.50 a day for each day of participation in the first offense, $2.50 a day in subsequent participations. An equivalent amount, the Ford demand goes on, shall also be assessed against the union itself, with the union permitted to appeal such cases after investigation through the grievance procedure, if it sees fit. It should be noted that Ford attempts to sidestep the usual proviso in settlements of United Mine Workers Union strikes, where similar fines may be imposed, by stating that any illegitimate strike settlement shall not provide that the employee liability be waived unless the union pays the company an equivalent amount from its own treasury, and that in no event will the company be requested to waive the union's liability.

AS matters stand, the General Motors pay offer as of today is definitely more substantial than that of Ford. GM has now raised its offer to 13.5¢ an hr for all employees, of which 1¢ will be used to equalize differences and inequities. Ford has offered 15¢ an hr to all hourly rated employees, but has conditioned the offer by the proviso that the increase does not become effective until the beginning of the calendar month during which total unit production of the company—Fords, Mercurys, Lincolns and trucks—reaches 80,000 units. Also, the resultant rates remain in effect for a period of two yr from the date they become effective.

Both such offers have been rejected by the union. The Ford proposal was turned down on the grounds that it contains "too many jokers." In the case of General Motors, the union continues to maintain steadfastly that what it is after is 30 pct, and that until the company's arithmetic shows otherwise, that will continue to be the demand.

Probably this is a bargaining position only; probably any time the union got an offer around 20 pct it would settle the strike in a minute, which leads to belief that if the tieup drags along as lengthily as many think it will, an even lower figure might be acceptable.

Just what part the fact-finding board which has been meeting in Washington will have to play in this wage settlement remains to be seen. Obviously both sides will have to compromise, for even though the board is considered as pro-labor, no one expects that it will recommend the full 30 pct sought by the union of General Motors, but, any pay raise recommendations sufficient to satisfy the union may be enough to put General Motors in the red, or at the very least to affect dividend policy, and at that point the company would probably balk. And on its side, the union position is very simple: Take-home pay has been severely reduced from war levels, and the maintenance of a decent standard

FOR BETTER GAGING . . . "GO" GREENFIELD

ARE YOU USING

Chromium Plated

THREAD GAGES for EXTRA WEAR?

The longer life of chromium plated gages more than makes up for their high first cost and results in worthwhile net savings.

While "Greenfield" has supplied chromium plated gages for many years, wartime expansion of facilities and research has enabled us to greatly improve our methods and quality. Now we can furnish a vastly superior product including Thread Gages as well as plain gages.

For further information on "Greenfield" chromium plated gages, call your "Greenfield Man" through your local "Greenfield" distributor.

GREENFIELD

GREENFIELD TAP and DIE CORPORATION

GREENFIELD, MASSACHUSETTS

of living compels a raise. In this connection it should be noted that the union has vehemently attacked General Motors advertising which points out that on a 45 to 48 hr work week the take-home pay of General Motors employees, figured on the basis of a pay increase of 13.5¢ an hr, would be actually more than was earned during the war. The union severely criticizes the company position in favor of a 45 hr week, saying this will act to reduce the number of jobs available and will impair the general purchasing power.

Simultaneously the union is modifying its position in several respects. For one thing, the word has evidently been passed along to modify picketing so that office employees can get into their jobs. One good practical reason for permitting this, it may be noted, is that payroll checks still due hourly workers, for time before the strike, are tied up in clerical departments.

LESS and less is being said about the earlier vociferous union demand that General Motors shall not use any pay increases it grants as a reason for seeking higher price ceilings from OPA. Probably as time goes on the "ability to pay" principle will be also mentioned less.

If the UAW fight with General Motors becomes concentrated simply on a pay raise, without the economic trimmings espoused by Mr. Reuther, it probably will be the result of pressure from Philip Murray of the CIO and from R. J. Thomas, president of the auto union. Neither of these latter two is entirely willing to bleed to death from an unchanged price ceiling if it stands in the way of getting pay raise for their memberships, and neither one is intrigued as intently as Mr. Reuther with the intangible—though perhaps not the less real—benefits to be secured for the nation at large by keeping prices down while wages advance.

Perhaps some softening of the union attitude also derives from the fact that the International is losing money today at a rate of $150,000 a month, currently cutting its cash assets to only $1,500,000. Membership which one stood above 1,200,000 has been reduced to 600,000 because of aircraft plant shutdowns and reconversion employment curtailments. For this reason, voice is again being given to recommendation from International headquarters that dues be advanced from $1.00 to $1.50 a month, simultaneously with which more efficient operations will have to be achieved within the union if bankruptcy is to be avoided.

Glenn Martin Contracts To Convert Transports For Passenger Service

Baltimore

• • • **Contracts amounting to more than $13 million have been signed by The Glenn L. Martin Co. here, with eight domestic and foreign airlines for the conversion of C-54 transport planes into luxury airliners.**

To do the job, nearly 3,000 Martineers who were furloughed immediately after V-J Day have been recalled and upon completion of the C-54 job will be transferred to work on the new Model 202 transports which will by then be in active production.

Airlines with whom contracts have been signed are: Pennsylvania-Central, Transcontinental and Western Air, Inc., Eastern Air Lines, Pan American, Northwestern Airlines, Braniff Airways, Chicago and Southern, Doderro, one of the largest in the Argentine, and Cruzero de Sul, largest operators in Brazil.

The C-54's are part of a number formerly in the service of the Army's Air Transport Command and have been declared surplus. Since it will be impossible for air lines to get delivery for some months on new ships, many of the ex-transports have been purchased for quick conversion.

While the ships were perfectly safe for military operation, they do not come up to the rigid specifications of the Civil Aeronautics Board and extensive revisions are being made here to make compliance possible. Wing tips, flaps and empennage and other parts have come off and will be reworked. Various parts of the ship will be strengthened.

Interiors are being ripped out down to the bare metal and being completely re-equipped. Large, deep seats will be of the latest design, carpets will be soft, air-conditioning the latest word. New galleys for stewardess use are being installed and every comfort possible provided for the passengers.

The complete job, from the necessary engineering work to the fixing of the last rivet, is being done at the Martin Middle River plants and airport. First of the converted ships is scheduled for delivery in December 1945.

SECOND HAND: *A used car lot and a used airplane lot across the street from one another, in Los Angeles, parked for display. Prospective buyers stand about, discussing terms and trade-in offers with salesmen regarding these former Army planes now being offered for sale.*

War Powers Act to Truman

Washington

• • • **The extension of the Second War Powers Act, which authorizes government priorities and allocation powers, to June 30, 1946, was finally passed and sent to the White House on Dec. 20. The act was not changed from its original form as reported in** THE IRON AGE, **Dec. 6, p. 90.**

TRUE ECONOMY in *Thread Gaging*

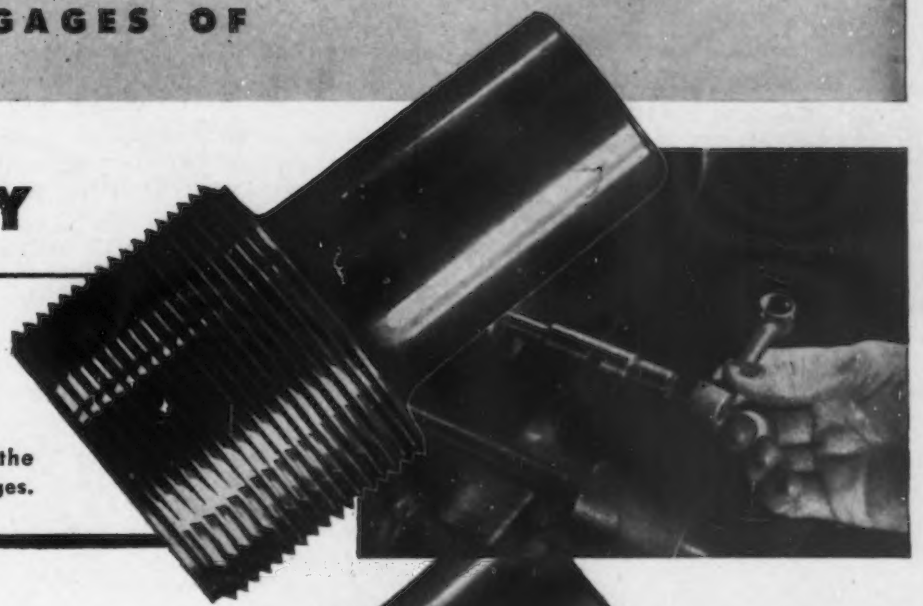
CALLS FOR GAGES OF

CARBOLOY

for

HIGH VOLUME INSPECTION

Providing at least 50 times the accurate service life of steel gages.

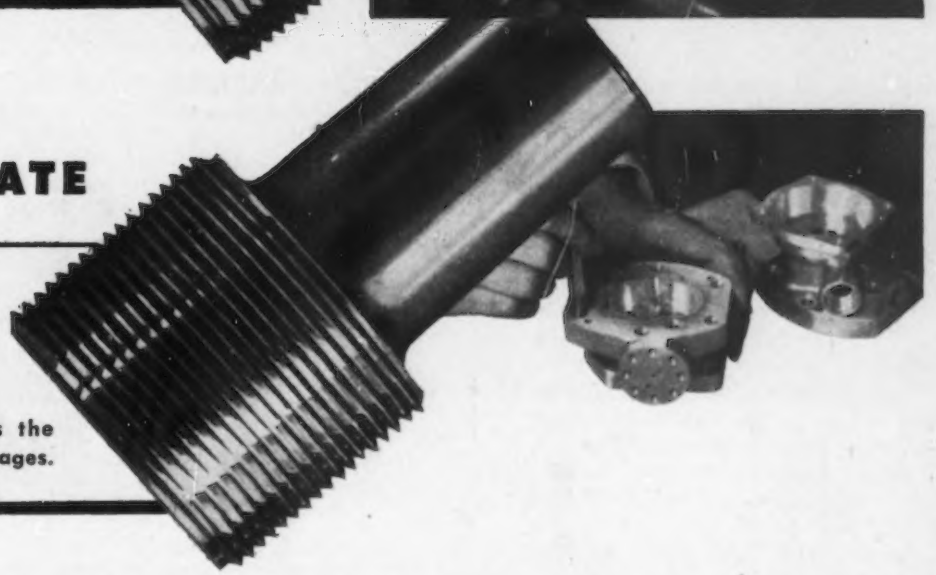


CHROME PLATE

for

AVERAGE VOLUME INSPECTION

Providing at least 5 times the accurate service life of steel gages.



WAR production proved that, in inspection of almost any volume, Lincoln Park wear-resistant thread plug gages make possible exceptional savings in gaging costs. The records of one customer using Lincoln Park Carboloy thread plug gages showed a gage cost of only 3.6 cents per hundred pieces using Carboloy gages, as compared with 19 cents per hundred pieces with steel gages. This is by no means an unusual case, but is typical of almost every instance where these gages have been used. Proportionate savings can be cited where Lincoln Park's chrome plated gages are in service.

Today, as in war-time, you'll find wear resistant thread plug gages will pay dividends in your inspection operations. And today, as in the past, Lincoln Park offers the experience and facilities to produce *the best* in gages of this type.

Lincoln Park **INDUSTRIES, INC.**

1729 FERRIS AVENUE • DETROIT 25, MICHIGAN

Washington . . . L. W. MOFFETT

• SPA expects to dispose of about $15 billion in surplus declarations out of an estimated $32.6 billion . . . Bureau of Census' statistical program hits snags.

WASHINGTON—Of the $32.6 billion in estimated surplus declarations for the fiscal year ending June 30, 1946, the Surplus Property Administration expects to dispose of about $15 billion with an estimated return to the government of about $2 billion, according to Surplus Property Administrator W. Stuart Symington.

Plants and equipment account for $10 billion of the total declarations, of which RFC plans to sell $700 million and lease $2.8 billion. Government return during the year from plants sold is estimated at $425 million and from plant leases $45 million. Aircraft and parts make up $10.7 billion of the total, of which about $9.9 billion is in unsalable aircraft to be disposed of as scrap. It is estimated that at best only $122 million of aircraft parts and components can be sold in their original form.

About $4 billion is in producers and capital goods, of which RFC plans to sell $1.2 billion. About $2 billion is in airports, of which an estimated $484 million will be disposed of to municipalities and other governmental subdivisions with no cash payment.

Three billion dollars is in consumer goods, of which $2 billion in sales is planned. Mineral and grazing land takes up $7 million, of which $2 million will be sold.

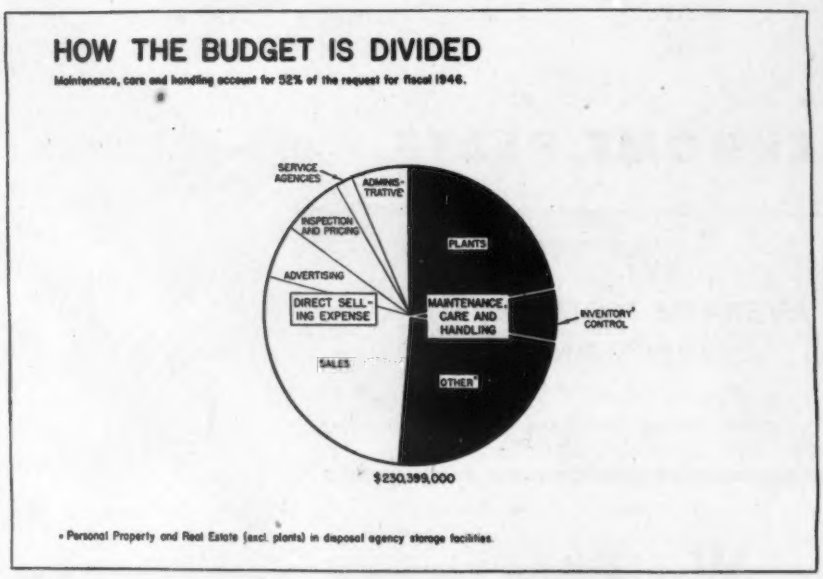
One hundred million dollars is in maritime property. Sales of this class of specialized property are difficult to predict because of a limited market, but it is estimated that 50 pct will be unsold.

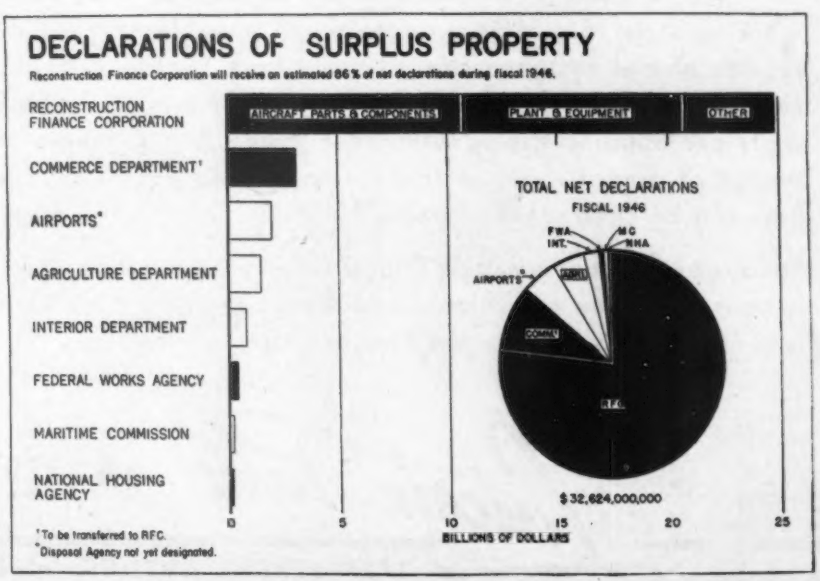
The remaining declarations will be made up of food and agricultural products, agricultural land, property in the territories, community facilities and housing.

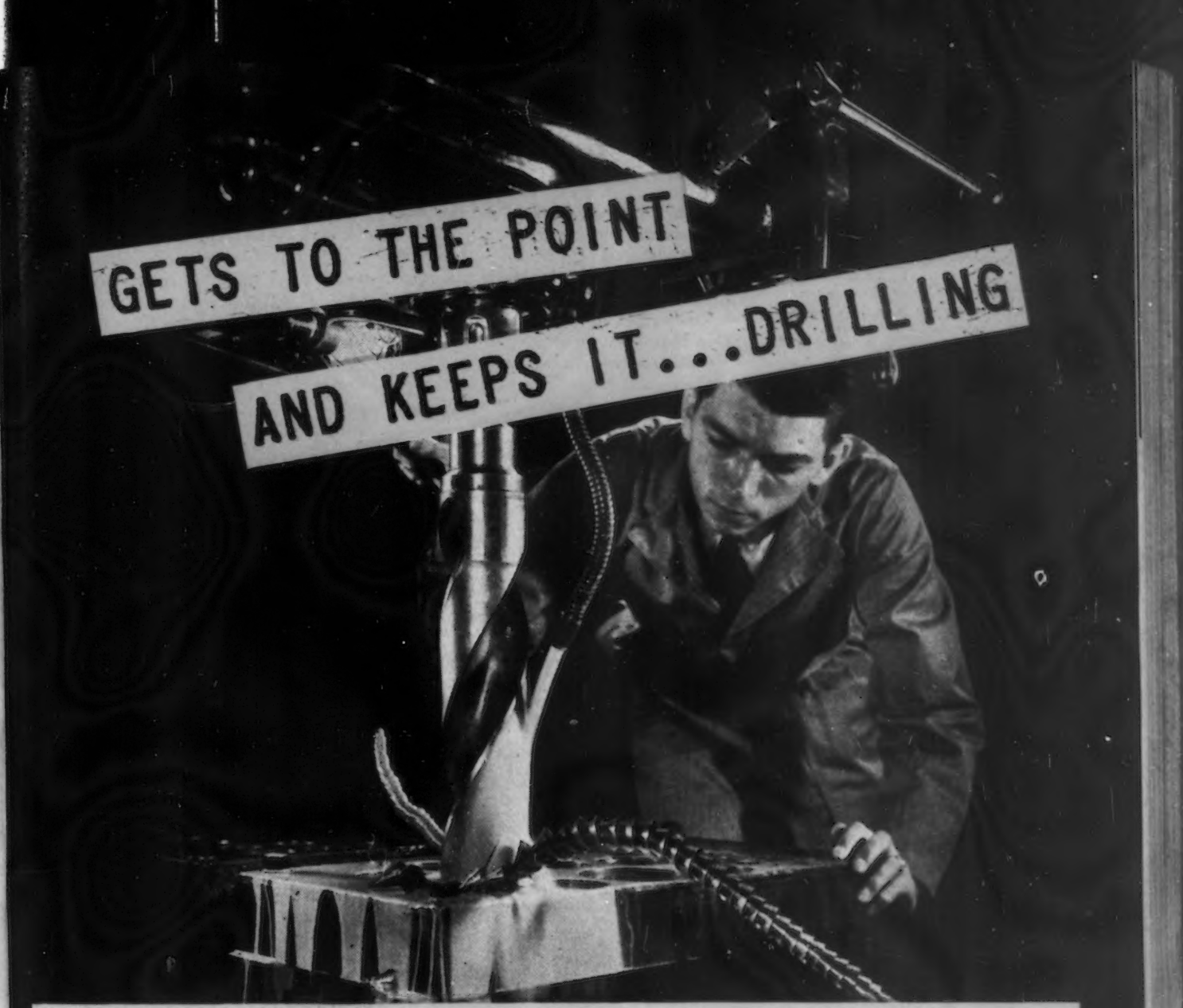
Disposals will be limited to about $15 billion because $10 billion is in plants requiring a long-range sales program; $3.5 billion is in other real property where substantial waiting periods are required to comply with the provisions of the law; and sales must be retarded in some classes of property to avoid disrupting the market for such property.

For every dollar of proceeds from sales during the current fiscal year the SPA budget estimates a cost of 12¢. The total SPA budget is approximately $230 million, making the cost of disposal 0.7 pct of the value of declarations. Expenses encountered in the care and handling of all surplus property account for 52 pct of the total budget, as shown on the accompanying illustration.

About 91 pct of the total declarations will be made by the combined RFC-Commerce disposal agency, which disposes of plants, aircraft, other capital goods, and consumer goods. Manifestly, 88 pct of the SPA budget is to be allocated to RFC.







SUNOCO EMULSIFYING CUTTING OIL

helps drills cut free and clean...prolongs drill life

Drills that hold their edges cut clean, cut fast, cut accurately and keep production moving. That's why leading metal working plants use Sunoco Emulsifying Cutting Oil to keep drills pointed for production.

Long drill life is what makes such manufacturers as the American Tool Works Company choose, use and recommend Sunoco Emulsifying Cutting Oil. In the photo above is an American 5'-15" Column Hole Wizard Radial Drill. A 3½" hole is being drilled in SAE 1020 cast steel at a speed of 83 RPM and a feed of .018"

Outstanding cooling and lubrication properties of the mixture of 1 part Sunoco and 20 parts water effectively protects the point of the drill. The drill clears easily, does not clog, chatter or burn. Drills last longer and the work is accurately finished with a fine surface.

Whatever the operation . . . drilling, reaming, boring, turning or milling, Sunoco Emulsifying Cutting Oil can help speed production in your plant. Get the details on how others have benefited with Sunoco. Write for your free copy of "Cutting and Grinding Facts" to . . .

SUN OIL COMPANY • ***Philadelphia 3, Pa.***

Sponsors of the Sunoco News Voice of the Air—Lowell Thomas

SUNOCO

SUN INDUSTRIAL PRODUCTS

OILS FOR AMERICAN INDUSTRY

The major items in the RFC budget follows:

For contracted warehouse operation	$25	million
For repairs and alterations to surplus plants	13	"
For the protection and maintenance of plants	31	"
For state taxes on plants declared surplus by RFC	8	"
For contracted appraisal of plants	3.5	"
For storage and maintenance of whole aircraft	11	"
For reimbursement of commissions and expenses of manufacturer-agents	31	"
For contracted advertising of surplus capital goods	5.4	"
Total	$127.9	million

In presenting his request to the House Appropriations Committee, Mr. Symington pointed out that in some of the smaller disposal agencies it would be possible to obtain complete liquidation within 2 yr. However, leasing of plants would extend the job in RFC to at least 5 yr. Continued consolidation is planned and eventually the entire disposal job will be in one agency.

* * *

THE expanded statistical program for business and industry under the Bureau of the Census is part of Commerce Secretary Henry Wallace's plan for "rejuvenation" of the businessman's bureau.

Additional funds have been requested to carry out the work. H.R. 4781, which would grant almost unlimited power to the Census Director in the collection of business and other statistics with fines and jail sentences for those who refused to cooperate, is now before the House Census Committee.

The work is going ahead, and several industries have received forms requesting information. When the program was announced industry was told that only material which was desired and could be used by manufacturers and the distributive trades would be gathered. Commerce further stated that the information would be kept in a confidential status.

This is where the program struck its first snag, for in several instances Commerce has been charged with failing to live up to these commitments.

The radio industry for instance has found itself confronted with three long questionnaires on which it says it was not consulted by the Census Bureau. On the questionnaire covering radio sets the radio industry is interested in only three of the 42 categories on which information is requested, and on these the industry has always collected weekly figures as contrasted with the monthly data requested by Census.

The forms covering radio tubes are a duplication of a service which was established by the industry 10 yr.

Further, the Census Bureau, it is claimed, has not kept its word in regard to the confidential status of such material, as evidenced by the following excerpt from the letter accompanying the set questionnaire:

"We have consulted with the Office of Price Administration and other Government agencies in the preparation of this report form. The Office of Price Administration has assured us that the information on Census Form M41A will meet their needs and that it will not be necessary for them to obtain similar information from any company reporting to the Bureau of the Census. Unless we receive instructions from you to the contrary, a copy of your report will be made available to the Office of Price Administration."

No such statement accompanied the forms covering tubes.

It is perhaps significant that industries which have not had pricing difficulties, as had the radio industry, have not reported any trouble in working out proper forms covering their products.

THE BULL OF THE WOODS — BY J. R. WILLIAMS

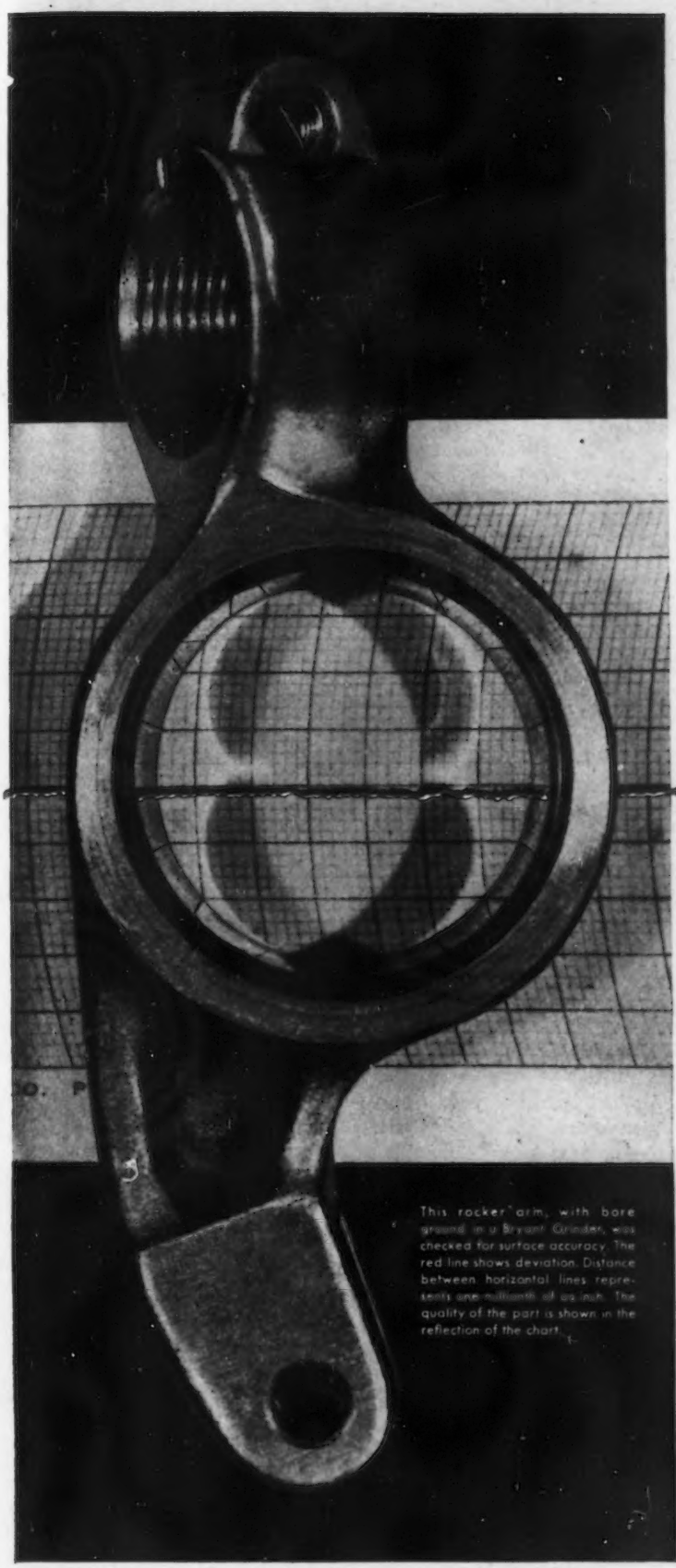
YE GODS! HOW CAN YOU GET SO DIRTY THAT YOU SHINE? LOOK AT ME--I DO TH' SAME KIND OF WORK AN' LOOK AT ME!
YOU DON'T WORK! EVERY TIME YOU STOP TO WIPE YOUR HANDS I MAKE TH' COMPANY TWO DOLLARS--ONE FOR ME AN' ONE FOR YOU!
THE OLD, OLD ARGUMENT--LIKE GITTIN' YOUR PICTURE TOOK WID A HOMELY! YOU GOT TO HAVE ONE TO MAKE THE OTHER!
12-28 J.R WILLIAMS
THE BLOTTER
COPR. 1945 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

Wage Increases Studied RR Axle Ceilings Upped

Washington

• • • **Authorized under its "product standard" basis of adjustment, OPA on Dec. 14 announced an increase to $3.50 per 100 lb from $3.15 in the ceiling prices of rough forged railroad axles. The increase became effective Dec. 19. OPA said that the upward adjustment is designed to cover increases in direct materials costs and labor rates experienced by producers since 1941. On the basis of study of operating costs of companies turning out more than 75 pct of the total production of railroad axles, OPA said that the increase is sufficient to cover average factory costs of manufacturers generally.**

Prices for completely finished axles include the base price plus costs of extra work and treatment on the axles as required by the purchaser, together with switching charges and freights from the producer's basing point. The basing points used by manufacturers are Birmingham, Pittsburgh and Chicago.



This rocker arm, with bore ground in a Bryant Grinder, was checked for surface accuracy. The red line shows deviation. Distance between horizontal lines represents one-millionth of an inch. The quality of the part is shown in the reflection of the chart.

When you measure *Life* in millionths of an inch

Often times life depends directly on quality of finish and dimensional accuracy. In such cases, it is necessary to precision grind the bore while holding to extremely close tolerances for roundness and parallelism. In every case, rapid production must be obtained. Finding the solution to hundreds of problems like the above has given Bryant a background of engineering know-how, plus a complete line of machines to meet any problems in the internal grinding field.

WE KNOW YOUR PROBLEM IS DIFFERENT

You may never have a problem just like the one illustrated. But the next time you have ANY problem in which extreme accuracy of internal grinding must be coupled with speed of production and the maintenance of close tolerances on other specifications:

Send for the Man from Bryant!

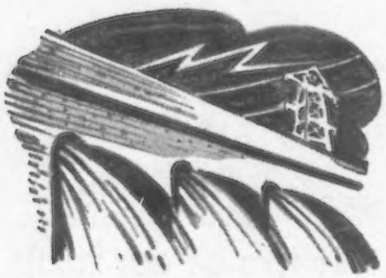
BRYANT

CHUCKING GRINDER CO.
SPRINGFIELD, VERMONT, U. S. A.

West Coast . . .

OSGOOD MURDOCK

• Surplus steel easing shortage for alert buyers . . . Gas fuel shut-off foreshadows Texas-California pipeline . . . Builders talk regulation and escalator clauses.



SAN FRANCISCO — Some manufacturing firms and steel warehouses are finding the solution to their material problems in the thoroughly reviled surplus materials situation.

In spite of the well-aired difficulties involved in buying from the Surplus Properties Div. of RFC, a few brave souls have been anticipating (1) a steel strike, or (2) higher prices, and have been filling their requirements from the inventories of RFC's regional offices, having found that the red tape and difficulties are not as gigantic as they had anticipated.

With inventories reported from the San Francisco offices running around $2,000,000 a month as goods move in and out, some small manufacturers have been able to fill their requirements for a period of several coming months—months for which it is not easy to foresee the condition of the steel market. These purchases have been made at about 30 pct off list prices in many cases and are regarded as either good spot buys or fair speculations. In the case of the warehousemen with their continuing inventory troubles, they are considered little short of manna from heaven.

Next week the local RFC offices are releasing a 72-page inventory of products available for spot delivery at Pacific Coast ports. These products, some available in large quantity and some in bastard sizes will be listed: Hot-rolled steel plate, structurals, bars and shapes—$2.30 a hundred; hot-rolled floor plate, $3.50; hot-rolled steel sheets, $2.75; strip, $2.10; cold-rolled strip, $2.90.

Tool steel and stainless prices vary according to alloys, and sheet continues restricted. In this latter product however, some manufacturers have found that it behooves them to keep in fairly close touch with the disposal offices because sheets do come in occasionally.

This material is sold by the RFC f.o.b. cars or common carrier at all Pacific Coast ports, and when not available in one location can often be obtained in another. And, surprisingly enough, reports indicate that red tape has been cut to a fairly low point.

* * *

A NEW construction program totaling $400 million over the next five years is to be inaugurated by the Pacific Telephone & Telegraph Co. and its subsidiaries, the Southern California Telephone Co., and the Bell Telephone Co. of Nevada.

The initial 1946 expenditure will amount to more than $100 million, doubling the sum spent for expansion in 1945. Scheduled for the first year's program are expenditures of $6 million for land and buildings; $21 million for exchange central office equipment; station apparatus and new phones, $37 million; exchange lines, $22 million; toll equipment and lines, $12 million; and general equipment, $4 million.

Some of the jobs included in the project entail addition of more than 8 million ft of wire in exchange cable; switching equipment for more than 270,000 new lines; 200,000 circuit miles of toll and long distance network; and a $5 million item for coaxial cables to facilitate the development of the television industry.

The press release announcing the construction program contained a clear implication from N. R. Powley, president of the companies that, like many another Coast firm, a substantial part of the necessary capital would be raised in the public market.

Officials of the companies made a rough breakdown of the total expenditure into three parts — $180 million to be spent in southern California (including the coaxial cable line); $155 in the northern part of the state, and the balance in the Northwest. In view of the utilities' record for accurate prediction of population trends, this division of approximately 44 pct and 39 pct will be eyed with some interest by other western prognosticators.

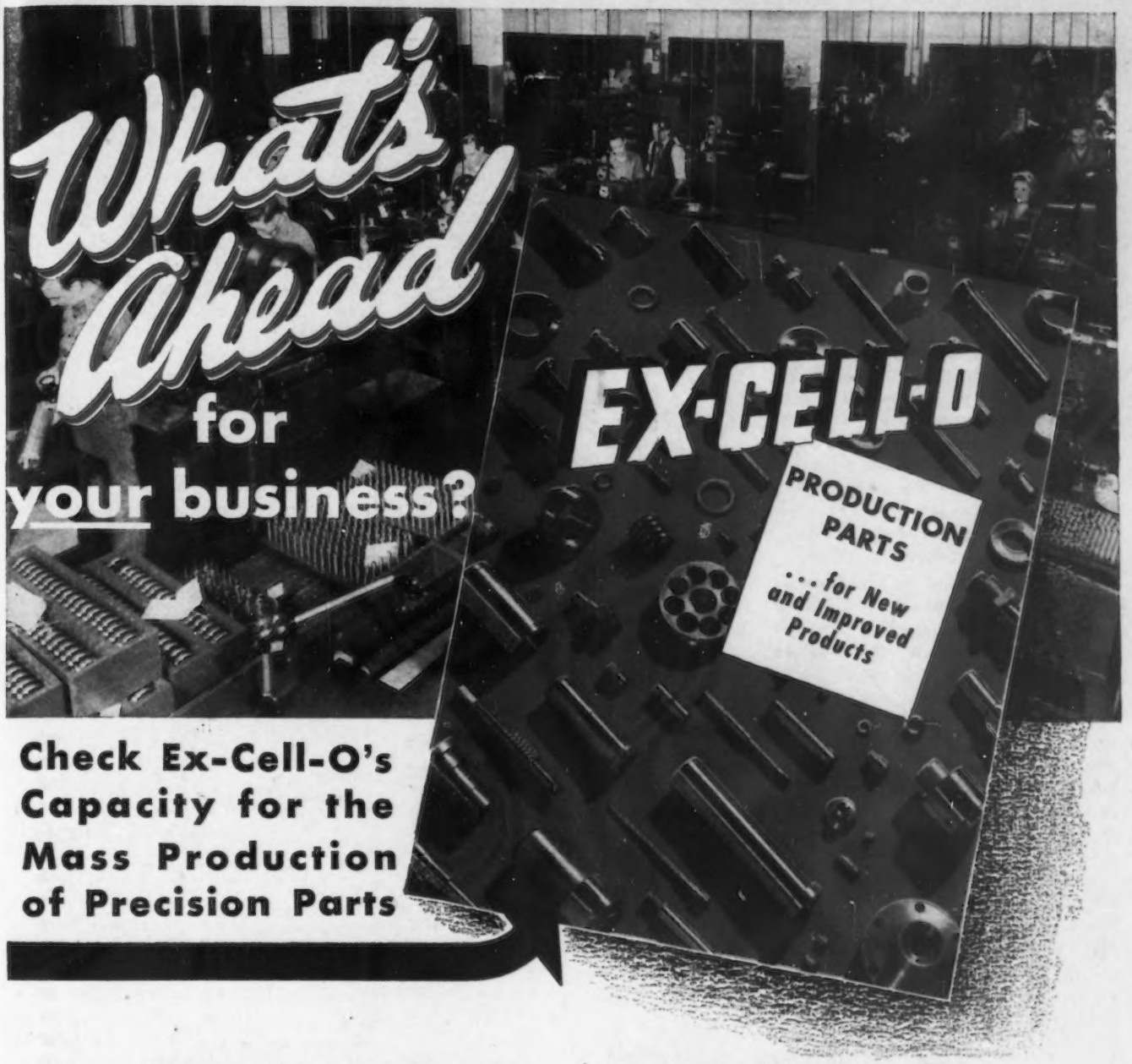
* * *

SEVERAL hundred users of natural gas in the southern California territory were cut off during the recent cold snap and had to switch to standby fuel. Companies affected were those in the surplus gas categories.

The shut-off highlights the necessity for developing a new source to serve the area, as well as a trend which has begun to assume noticeable proportions. Fuel contracts in the industrial brackets run all the way from dump gas users who pay 12¢ to 13¢ on up to the top prices in the schedule. During the war, essential industries were so designated by the appropriate war agencies and southern California industry went through the entire conflict without interruption of service as a result of these designations. Under California State Railroad Commission requirements, such distinctions are not recognized. Hence certain heat treating industries have found it advantageous to assure themselves of a high quality, even-pressure fuel supply by voluntarily applying to their local utilities for a higher bracket contract. Numbered among the plants in which this movement has been observed are both ceramic and aircraft firms.

Far less drastic than it might be made to sound, this recent and wholly minor development may be considered the immediate forerunner of an application for the construction of the pipeline from the Houston, Tex. field to southern California (THE IRON AGE, Oct. 4, p. 100). Application to the State Railroad Commission for its construction is expected daily. The California end of the line is destined to meet one to be installed by the El Paso Natural Gas Co., extending to the Colorado River.

Original reports concerning the prospective contractor gave strong indications that A. O. Smith was to be the builder and it was rumored that the latter firm was taking bonds of the former in the deal. Records of the disposition of the bonds for the project do not list the Smith Co. as



Check Ex-Cell-O's Capacity for the Mass Production of Precision Parts

With a complete organization under one responsible management . . . *an organization built upon years of varied engineering experience, modern machining methods and heat treat facilities, and practical inspection staffs* . . . Ex-Cell-O probably has the exact solution to the parts production problem you face. The above folder illustrating Ex-Cell-O's complete parts production facilities will be sent you upon request. Write or wire Ex-Cell-O today and ask for Ex-Cell-O Bulletin No. 36151.

XLO

EX-CELL-O *for* PRECISION

Send sketch, blueprint or sample of your part to Ex-Cell-O

EX-CELL-O CORPORATION

DETROIT 6, MICHIGAN

subscribers and it is understood that the contracts for the two jobs, totaling over a thousand miles of 26 in. pipe are still open for figuring.

Construction of the new line into Los Angeles is slated to bring in an additional 125 million cu ft a day of gas and build up to an ultimate 305 million daily capacity.

* * *

As millions of dollars are added to already accumulated millions of dollars worth of construction on the Pacific Coast, the industry is beginning to talk about voluntary and self-imposed regulation. With project after project being added to the workpile, and no solution to the material and manpower shortage in sight, the chicken-or-the-egg argument is assuming major proportions.

Engineering talent on the Coast is simply not available—as testified to by the $3.50 an hour wage being offered to draftsmen. Several firms are holding all expansion plans in abeyance until construction workers and materials become available. At the same time housing conferences have been putting this acute shortage into headlines, and delegations to Washington have been asking for a curb on all building activity other than residential housing. Simultaneously, businessmen and interested civic bodies are asking what good it will do to build houses for people who have no jobs, and point out that industrial projects must command equal precedence with residential construction.

Members of this industry have refigured 1939 building plans and find that costs have increased in many cases by 100 pct and declare that it would be foolhardy to build until rental ceilings are raised. And to complicate matters still further, recent meetings of building men have been marked by serious discussion of not taking building contracts that do not include escalator clauses to provide for the risks attendant on possible labor disputes—declaring, with what seems good reasoning to them, that such risks should not be borne by them alone.

As if the task of industrializing the West were not sufficient in itself, businessmen are confronted with an addition to the age-old question of which came first—the chicken, the egg, or the shell.

ICC Rules Railroads Hold Freight Rates Over Water Traffic

Chicago

• • • In a decision involving the rail rate structure on the Pacific Coast, the Interstate Commerce Commission has ruled that the railroads must make upward adjustments in water-competitive tariffs to maintain set differentials above steamship charges.

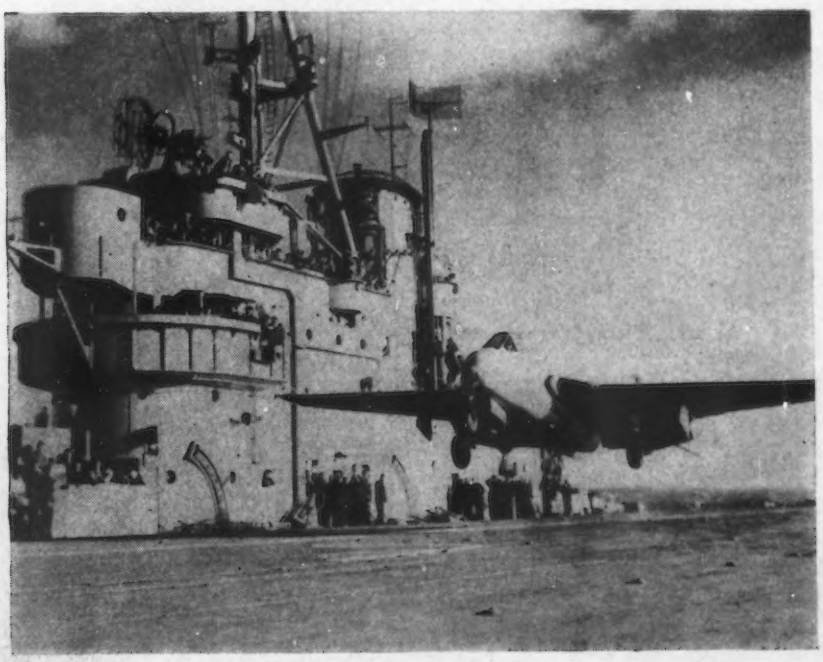
The decision dashes hopes of the railroads that they may hold present rates while the steamship lines make upward adjustments in the postwar period, thus placing rail traffic in a better position to compete with water-borne freight. The decision may be a paramount factor in anticipated wholesale revision of competitive rail and water freight structures involving coastwise, intercoastal and Gulf water rates in relation to Eastern and Western overland charges and transcontinental tariffs.

The Interstate Commerce Commission was petitioned by American-Hawaiian Steamship Co., Coastwise Lines, Consolidated and Olympic Line, and Pope and Talbot, members of the Pacific coastwise conference, to amend the fourth section rail rate structure authority to require the railroads to adjust their rates upward to maintain a full differential over water rates whenever the steamship rates are raised. The Commission granted this plea reversing the position taken in 1928-29 when it held that "We are not persuaded that increases in rail rates should be required every time the water lines by increasing their rates, reduce the differential . . ." At that time, the Commission said that the railroads should not violate differentials ranging from 9c to 15c per 100 lb over water charges in class rates and from 3c to 25c on commodity rates in allowing the rails to make downward alterations to meet any new rates the steamship lines might establish. There was no mandatory requirement, however, that such shift must be made to meet competition.

The decision marks a serious reversal, traffic experts believe, to railroad hopes of retaining any substantial proportion of traffic gained during the war, while the steamship lines were inoperative, by gaining special concessions to meet water rates.

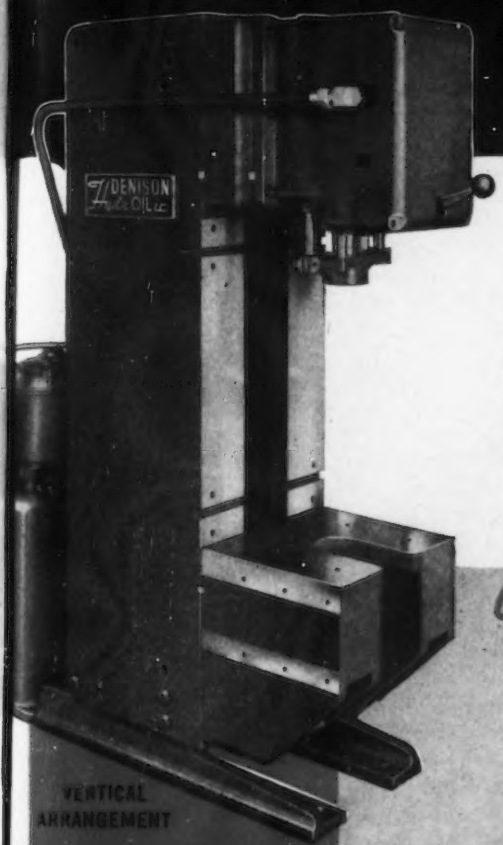
The petition by the steamship lines to force the railroads to maintain rate differentials may be an indication of attempt to raise water rates to cover increased operating expenses in the postwar period. If this is true, and an increasing intercoastal rate structure follows for both the railroads and steamship lines, Far Western steel plants constructed during the war will receive renewed encouragement in meeting competition of Eastern steel producers.

JET TAKE-OFF: *A British Vampire jet plane takes off from the flight deck of the HMS Ocean during a series of landing and take-off tests.*



Hydraulic Power and STARTLING CONTROL OF IT!

READY TO ADAPT TO YOUR SPECIAL REQUIREMENTS!



VERTICAL ARRANGEMENT

VERTICALLY TILTED ARRANGEMENT

HORIZONTAL ARRANGEMENT

Here, in MULTI-UNITS, is complete oil-hydraulic power . . . as packaged components, ready-to-operate, and standardized . . . for easy, economical application to your special machinery or production equipment wherever 4 to 6-ton pressures are required. Or, there's a standard MULTI-UNIT Frame which complements the Pumping Unit and Power Head and may be used in any of four different positions, as a complete machine tool in itself!

Unlimited FLEXIBILITY OF ARRANGEMENT

Two assemblies . . . Pumping Unit and Power Head . . . form the working parts of MULTI-UNIT HydrOILic power. The Pumping Unit may be located anywhere adjacent to the Power Head. It includes electric motor, hydraulic pump, reservoir, and pressure regulating valve . . . is available in 4 and 6-ton capacities.

The Power Head can be applied to machines of your design, or used on the Standard Frame. It incorporates hydraulic cylinder and ram, control valve, control lever and adjustment devices . . . is available in five models for an amazing variety of ram actions, including manual or automatic control, rapid traverse and regulative pressing speed, automatically repeated pressure strokes, automatic ram cycling, and the now-famous Vibratory HydrOILic Pressure. Ram pressures are closely limitable up to 4 or 6 tons. Ram strokes are regulative between ½ inch and 6 inches.

The Standard Frame may be used in four different positions—horizontally, by using legs which are available in two lengths—vertically, and vertically-tilted 10 or 20 degrees, by means of standard feet. Maximum daylight opening when using the Standard Frame is 24 inches—minimum 12 inches. Maximum depth from centerline of ram to frame throat is 8 inches. Standard, interlocking accessories, such as indexing tables and ejection cylinders, are applicable to these Multi-Units.

Thus, Denison engineers offer industry all the features of smooth, positive, and easily-controlled HydrOILic power in a form which you can apply to your particular production needs quickly and economically. Write today for additional information.

PUMPING UNIT

POWER HEAD (MANUAL CONTROL)

POWER HEAD (AUTOMATIC CONTROL)

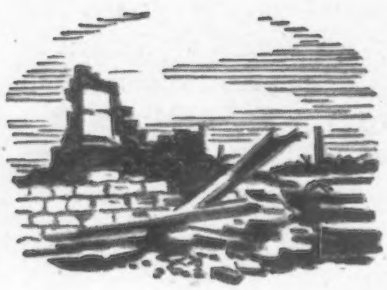
THE DENISON ENGINEERING CO., 1158 DUBLIN ROAD, COLUMBUS 16, OHIO

HydrOILics CREATE INDUSTRIAL RIGHT

DENISON EQUIPMENT in APPLIED HydrOILics

European Letter . . . JACK R. HIGHT

• British issue report on reconversion . . . Unemployment to reach 300,000 this year . . . In November idle workers numbered 266,461.



SHEFFIELD, ENGLAND—Possibly in answer to questions raised concerning the numbers of persons still employed on munitions in Britain, the Ministry of Labor has disclosed that at least 1,080,000 persons have been reconverted to civilian tasks since June. Figures for July, August and September approached 250,000 per month, and increased to 341,000 in October.

Salient questions had been raised in the recent Parliamentary debates on measures in censure of the government on the funds still being spent on materials of war, and it was disclosed at that time that the payrolls of the munitions plants still totaled a third of their highest wartime figure.

Estimates by the Ministry indicate that the figures for the last two months of this year will approach 1,190,000. If this figure is reached, Britain will begin 1946 with industrial labor totaling 14,500,000, compared with 16,500,000 in mid-1939, and less than 12,500,000 last June.

In approximating the losses from the country's labor market, it is stated that in the period since June 327,000 women and 27,000 men have left the payrolls and that there were on Oct. 31, 360,000 men and women from the British armed forces on terminal leaves who had not yet taken up employment.

The unemployment figures at the latest compilation in November totaled 266,461, representing an increase of about 33,000 from the previous month. The Ministry estimates 54,000 of the total figure to be married women, many of whom are not expected to reenter the labor market. It is expected that the total figure will increase to at least 300,000 before the end of this year, as the scale of reconversion here increases.

Figures released in London in regard to the numbers released from the services were also interesting, as criticism of government policy in this respect had been as widespread as in America. In October, 199,000 were released, reducing the total figure to 4,611,000 in uniform, and it was disclosed that 2,511,000 persons are employed in keeping the services supplied. This brings the total employed in nonproductive work to 7,122,000, equal to half of the total civilian labor force estimated for Jan. 1, 1946.

Announcement of the allocation of 29 surplus government-built war plants to industry brings to 170 the total so released. The Board of Trade estimates that the 7 million sq ft of floor space released in these 29 facilities, three-fifths of the total amount expected to become available, has been handled, with an estimated 44 million sq ft already released. The Board estimates the latest releases to be capable of eventually employing 35,000 workers. Added to previously announced totals, the surplus plants now allocated have potential total payrolls of between 300,000 and 400,000 people. It is stated that most of the large plants have already been included in the releases.

ALMOST 600 new industrial building programs have been licensed by the government and some are already underway. Half of these are reported to be in the four principal industrial development areas in which the government is interested. Part of the district planning program mentioned here previously is the program for the erection of 50 new light industries plants in the South Wales area to supplement the heavy industry upon which the economy is so dependent.

A special program which has not yet been detailed by the government calls for establishment of 10 factories in the Wales district for the employment of miners suffering with silicosis. The plans are for the factories to be built by the government and let to private firms. They are to be located primarily in the anthracite district of West Wales. A government white paper is scheduled to be released later on this subject.

In the Wales development area as a whole there are now planned 50 new light industries. They will provide employment for women where there was none available previously and are expected to employ about two-thirds women.

Furthering the government's long-term plan to combat Britain's prewar chronic unemployment centers the North-East industrial development area now embraces no less than 330 programs, including trading estates and factories. An estimated 1,500,000 sq ft of factory floor space are involved. In Scotland an additional 46 factories are planned.

The government's Controller-General of Factories estimates that this district development plan will clear about 25 pct of the prewar unemployment problems. New factories are being put in construction even before firms make application for their operation.

* * *

HOPES of the British steel industry, as well as British housewives, that coal prices might somehow be reduced were dispelled recently when the Minister of Fuel and Power, Mr. Emanuel Shinwell, declared that the days of cheap coal are over. He is in charge of plans that are being drawn up detailing the nationalization of Britain's mines.

Describing coal miners as ranging with agricultural labor in being the most depressed, hardest worked and lowest paid class of workers, he stated that they are now coming into their own. Among the benefits promised by the charter now drawn up for mine-working are stabilization of production, development of new uses for coal products, better wages, paid holidays, shorter hours, improved health and safety conditions, old-age allowances, training courses for new men and cooperation among the parties involved in the industry.

* * *

One of the first "Working Parties" for an industry in Britain is being set up for the Sheffield cutlery industry, and is to be formed with three labor members, three employer members,

EVERLASTING

in spite of the elements

Harper Everlasting Fastenings, at first glance, may seem remote from the Rock of Gibraltar, but the comparison is closer than you might suppose. The "Rock" has withstood the elements of wind and wave and time for centuries. To all intents and purposes it is Everlasting. Harper fastenings, made exclusively from non-ferrous metals or stainless steel, also resist the elements, rust and corrosion so stubbornly that they are considered Everlasting compared with common steel—or the products in which they are used.

BRASS
BRONZES
COPPER
MONEL
STAINLESS

everlasting fastenings

Harper Everlasting Fastenings may be ordered from a stock of over 5000 items including bolts, nuts, screws, washers, rivets, nails and special fastenings. Other special fastenings are made to order quickly from large stocks of raw material. Write for 104 page catalog.

THE H. M. HARPER COMPANY

2607 Fletcher Street . Chicago 18, Illinois

BRANCH OFFICES: New York City • Philadelphia • Los Angeles • Milwaukee • Cincinnati • Houston

Representatives in Principal Cities

HARPER
Chicago

three public members and a chairman to be nominated by the Board of Trade. Part of the Labor Government's program designed to bridge the gap between labor and management, the working parties are to advise management on the operation of their various industries.

Sir Stafford Cripps, president of the Board of Trade, who is being blamed for the conception of the working party idea in much of the Opposition press, made a recent visit to Sheffield to officially set in motion the organization of the group.

Since his visit W. Cooke, president of the Cutlery Council and president of the Sheffield Spring Knife Worker's Amalgamated, and H. Slack, general secretary of the National Cutlery Union and secretary of the Cutlery Council, and Mr. E. Wood, assistant secretary of the Sheffield branch of the National Cutlery Union, have been named as labor members of the group. Other members have yet to be named.

Heavy Gage Galvanizing Line Under Erection At C-I Irvin Works

Pittsburgh

• • • Construction of a heavy gage continuous hot dip galvanizing line has been started at the Irvin Works of Carnegie-Illinois Steel Corp., and completion is expected in late 1946. The line is designed to produce heavy gage galvanized material, mainly for railroad car roofing, although it can be used in the fabrication of other items such as culvert stock. The line is designed for galvanizing coils from 16 to 11 gage, and will be about 200 ft long. Production is expected to total about 10 tons per hr, and the annual capacity of the mill is set for nearly 80,000 tons.

This method of galvanizing was developed over a two-year period by joint experiments with American Steel & Wire Co., another U. S. Steel Corp. subsidiary. Experiments were made with 4 in. wide strip. The new line, however, will be able to handle coiled material up to 54 in. wide and will be the first wide continuous galvanizing line installed by the U. S. Steel Corp.

The finished material will have coatings that, according to company officials, will be sufficiently strong and tight to withstand shaping or drawing without flaking or peeling. The product of this mill will be sold as flat material, which can be shaped, drawn, or corrugated by the buyer.

La Consolidada Plans Expansion in Rolling Mill & Ingot Output

Chicago

• • • Construction of a new rolling mill near Mexico City and proposed additional ingot capacity at Piedras Negras, Mexico, has been revealed by the filing with the Securities and Exchange Commission of a registration statement for 166,667 shares of a new cumulative preferred stock of La Consolidada, S. A., Mexican steel producer.

Shields & Co., American Investment Bankers, hold a controlling interest in the Mexican concern.

Purchasing of equipment for the rolling mill has commenced under the direction of Warren Worthington, Pittsburgh, in line with the recommendations of Arthur G. McKee & Co., Cleveland. It is contemplated that the new mill will roll carbon and alloy bars, light structural shapes and rods, and will represent a new investment of over $1 million. Equpiment to be installed includes a 30-in. three high mill, a 21-in. three high three stand mill, a 16-in. three high three stand mill, a 14-in. six stand mill and a 10-in. six stand continuous mill. Initial annual finished product capacity is estimated at 48,000 tons.

Openhearth ingots for the new mill will be supplied by the company's plant at Piedras Negras, which now has one 35-ton openhearth and which will be expanded by one or two additional openhearths. A new 12½-ton electric furnace will be installed.

It is pointed out that the rolling mill capacity could be expanded at a later date to include heavier structurals and skelp and that butt or electric-welded pipe might then be produced.

Current operations of the company include the openhearth at Piedras Negras, which principally utilizes Texas scrap and which supplies the bulk of ingot requirements, and a much larger plant at Mexico City which carries on rolling and fabricating operations. Present products of the Mexico City plant include merchant and reinforcing bars, rods, and light structurals, steel castings, bolts, nuts, and similar items, automobile and railroad springs, steel wire and welding rod, and hand tools.

In addition, La Consolidada has a volume in the nonferrous field about one-half as large as that in steel products. It operates a brass foundry, an electroplating shop, and makes a variety of white metal products. A substantial sales volume is accounted for by insulated copper wire and cable, and approximately $160,000 worth of new equipment has been installed, with $80,000 more on order, for this division. Equipment also has been purchased to produce a variety of plastic products.

Operation of the new rolling mill, which is located on a separate site from the old plant, is anticipated by mid-1946. Eventual disposal of the old plant, located within Mexico City, is expected when equipment there is transferred to new locations.

Panama RR to Buy Here

Washington

• • • New locomotives, freight and passenger cars are urgently needed by the Chiriqui National Railroad of Panama and the government has approved a loan of $500,000 for purchase of the equipment, according to the Dept. of Commerce. An additional loan of $200,000 for the purchase of a refrigeration boat for the transportation of agricultural products is reported under consideration.

Silver Act Extension

Washington

• • • Hearings are to be resumed before the Senate Banking and Currency Committee on legislation to extend the Green Silver Act beyond Dec. 31, when the law expires.

Senator McCarran of Nevada is scheduled to appear as a witness and is expected to oppose the bill in its present form. His own bill provides for the purchase of silver at the monetary price.

Proponents of the Green Bill are not too hopeful that the measure will be pushed through before the holiday recess. However, it was believed that a compromise amendment setting a time limit of three years on the extension might be effected and that this would speed action on the bill before the recess. The bill as it stands does not specify a time limit.

The silver block has opposed the bill and Senator Murdock of Utah recommended to Secretary of the Treasury Vincent, who was a witness, that all treasury silver be monetized.

Legislation authorizing the Treasury to sell or lease government-held silver for industrial use for the next two years has been passed by the House and sent to the Senate.

How Murex Type MA Helped Us out of a Jam

We'd almost gotten our new arc welding department running perfectly, when in comes this special carbon-moly steel pipe job that threatened to knock us back on our heels.

I went over the situation with Tom, our arc welding super, and he was not happy about it.

"The work can't be positioned," he said, "and we have to use these A.C. Machines—the D.C. sets won't be ready for weeks. On top of that, they want a tensile strength of 70,000 or more, with better than 22% ductility. That's going to take quite a rod."

"Right, Boss," I agreed. "*And Murex Type MA is the rod.* It was designed for *all-position* welding of carbon molybdenum and other high strength steels. It works on A.C. or D.C. It's especially useful for high-quality overhead and vertical welds. This rod was the first of its type in the industry...only been available for a couple of months. Want to try it?"

"You bet," Tom told me. "We'd better check on it right away."

We did, and it worked fine. We got the pipe job out on time, and now we stock a supply of Murex Type MA rods regularly for similar jobs. Tom swears by this new E-7011 electrode; the welders like it; and Quality Control thinks the work we turn out with it is swell. Of course, I'm happy, too.

METAL & THERMIT CORPORATION

120 BROADWAY, NEW YORK 5, N. Y.

ALBANY • CHICAGO • PITTSBURGH • SO. SAN FRANCISCO • TORONTO

MUREX Electrodes

PERSONALS

o o o

• **William H. Norris** has been appointed manager of the Titusville plant of the Universal-Cyclops Steel Corp. Formerly manager of the Watervliet plant of Allegheny-Ludlum Steel Corp., Mr. Norris has been closely associated with the production of tool steels and special electric furnace steels for over 35 yr. **W. J. Long**, previously assistant general sales manager, has been appointed manager of tool steel sales for Universal-Cyclops Steel Corp. After spending 10 yr as district sales manager in eastern New England, Mr. Long was transferred to the company's executive offices at Bridgeville, Pa., in 1940. He will continue to make his headquarters in Bridgeville. **L. S. Fulton** has joined the corporation as stainless metallurgical engineer. He was formerly with Crucible Steel Co. **J. F. Bookwalter** has joined the stainless strip sales dept. of Universal-Cyclops Steel Corp. After several years in the Steel Div. of the WPB, Mr. Bookwalter was with Edgecomb Steel Co., Newark, N. J., prior to accepting this new position.

• **John J. Hogan** has joined the Brunner Machine & Tool Co., Inc., in the capacity of vice-president and general manager with offices located in New York.

• **Frederick W. Watson** has been appointed manager of the Body Div. for the new auto concern of Kaiser-Frazer Corp. at the Willow Run plant, Mich.

• **Robert M. Lloyd** has been appointed assistant to vice-president, raw materials dept., U. S. Steel Corp. of Delaware, Pittsburgh. He first joined U. S. Steel as an employee in the sales dept. of the Carnegie-Illinois Steel Corp. in 1926 and was assistant director of raw materials for the company at the time of his present appointment.

• **Max J. Pischke**, formerly Pittsburgh district sales manager, has been promoted to the position of manager of warehouse sales, Allegheny Ludlum Steel Corp., Pittsburgh. Mr. Pischke, who will manage sales to all warehouses, jobbers, and distributors of Allegheny Ludlum products, joined Allegheny Ludlum in 1941, after 8 yr in the industrial supply field in Pittsburgh.

• **J. A. Thompson** has been appointed St. Louis district manager in charge of the new St. Louis office of Ferro Enamel Corp., Cleveland. He has represented Ferro Enamel in that district for many years.

• **Helge Holst** has joined the staff of Arthur D. Little, Inc., Cambridge, Mass., to serve as assistant to Earl P. Stevenson, president.

• **Carl W. Moyer** has been named general director of industrial relations for Fisher Body Div., General Motors Corp., Detroit, with **Ralph R. Nordyke** appointed assistant general director of industrial relations. Mr. Moyer, who has been assistant general industrial relations director, succeeds John J. Cronin.

• **Charles M. Green**, formerly of Cincinnati and Kings Mills, Ohio, has been promoted to executive vice-president and general manager of the Sperry Gyroscope Co., with offices in New York City.

• **H. D. Malone** has been appointed assistant sales manager of the American Welding & Mfg. Co., Warren, Ohio.

• **Harold J. Ritter** has been elected president and treasurer and a member of the board of directors of the Norma-Hoffmann Bearings Corp., Stamford, Conn. He succeeds **O. P. Wilson**, who resigned. Prior to his resignation from the Norma-Hoffmann Bearings Corp., which became effective June 30, 1944, Mr. Ritter was with the company for 28 yr, having held many company posts including that of sales manager, assistant secretary, secretary, vice-president and director.

• **Walter F. Nessen** has been appointed chief industrial designer for Product Designers, Chicago.

JOSEPH B. TERBELL, executive vice-president, American Manganese Steel Div., American Brake Shoe Co.

• **Joseph B. Terbell**, affiliated with various divisions of American Brake Shoe Co., New York, in sales and executive capacities since 1928, has been appointed executive vice-president of Brake Shoe's American Manganese Steel Div. In 1940 he was promoted from a district sales manager's position to a vice-presidency with American Manganese Steel. Three years later he was named first vice-president.

• **Forrest G. Wilson**, formerly a salesman at the Dallas branch of Wagner Electric Corp., St. Louis, has been appointed manager of the Indianapolis branch. **H. F. Zahn**, formerly manager of the Atlanta branch, has been made manager of the Philadelphia branch. **C. G. Jackson**, former manager at the Boston branch, has been moved to Atlanta to manage that branch. And **J. K. Miller**, heretofore a New York branch salesman, has taken over the management of the Boston branch.

OBITUARY...

• **J. F. Lord**, assistant general manager of the Chicago & Eastern Illinois R.R., died Dec. 13.

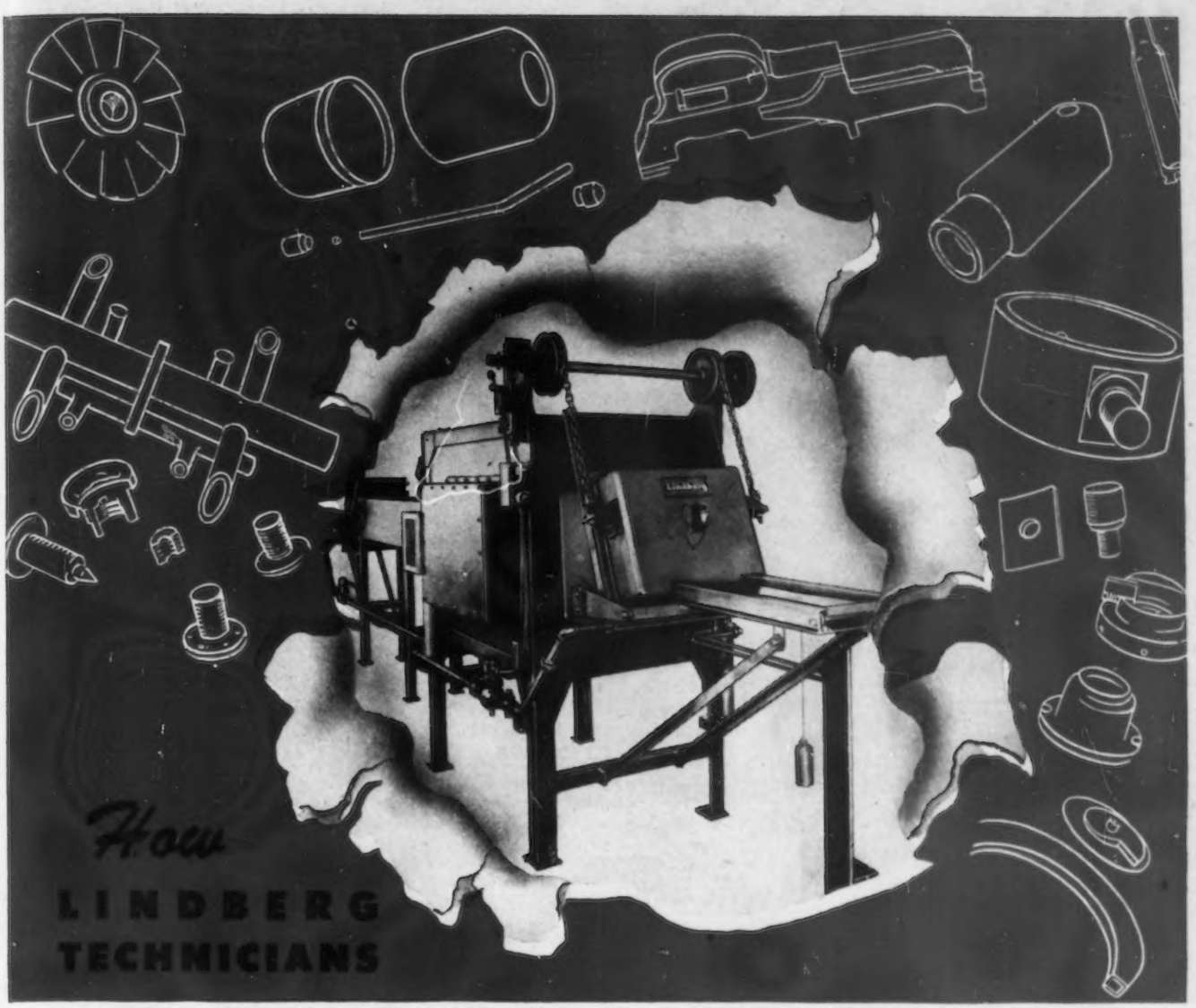
• **Arthur S. Aborn**, 77, former salesman for the American Steel & Wire Co., Cleveland, died at his home in Stoneham, Mass., Dec. 14.

• **William A. Sanderson**, 71, eastern sales representative of the Diamond Calk Horseshoe Co., Duluth, Minn., died in Arlington, Mass., Dec. 12.

• **Timothy S. Goodman**, 60, widely known industrialist, charity worker, and sportsman, died recently. He was vice-president of the Weir-Kilby Corp., Cincinnati.

• **H. M. Bray**, sales manager of Ajax Steel & Forge Co., died in Detroit recently.

• **William D. Woolson**, 79, director of the Boston & Maine Railroad since 1922, treasurer of Jones & Lamson Machine Co., vice-president of the Fellows Gear Shaper Co., and a director of Vermont Foundries, Inc., died at Springfield, Vt., Dec. 10.



CAN REDUCE YOUR COSTS WITH THIS PRODUCTION BRAZING FURNACE

The high-production efficiency of this versatile all-purpose Lindberg Brazing Furnace — plus the technical assistance of our able research staff — is helping many manufacturers reduce costs and speed reconversion.

The parts sketched above are typical of many being produced faster . . . better . . . cheaper by this basic improvement in production technique.

Your competitive position may be strengthened by having Lindberg technicians analyze your product and methods. Their findings may possibly uncover ways to replace slower, more expensive processes with fast, economical Lindberg Production Furnace Brazing.

This analysis leaves nothing to chance, costs you not a cent! Let our engineers explain the full benefits of using Lindberg Production Furnace Brazing. Your inquiry places you under no obligation. Write today!

LINDBERG ENGINEERING COMPANY
2452 WEST HUBBARD STREET, CHICAGO 12, ILLINOIS

LINDBERG *Furnaces*

SUPER-CYCLONE • CYCLONE • HYDRYZING • BRAZING

Dear Editor:

HEAT-RESISTANT STEEL

Sir:

Will you send us tear sheets of the article in your Nov. 8 issue by R. A. Lincoln on "Selecting the Proper Heat-Resistant Steel."

L. A. BEADLE
Rolock Inc.,
Fairfield, Conn.

● Tear sheets have been sent.—Ed.

PREFABRICATED MATERIALS

Sir:

Will you be so kind as to give me the names of a few concerns who manufacture prefabricated garages, houses, and small out-buildings for farms.

C. E. RIDDELL
520 B Street, N.E.,
Washington

● A suggested list of companies is forwarded.—Ed.

PRESS RITE PUNCH PRESSES

Sir:

We wish to contact the manufacturer of the Press Rite Punch Presses and believe same are produced by Havier Mfg. Co. Could you supply their address?

A. J. HOFMANN
A. Jay Hofmann,
Narberth, Pa.

● The address of Havier Mfg. Co. is 473 N. Cleveland, St. Paul, Minn.—Ed.

NEW ATTRITION GRINDER

Sir:

The first item reported under "News Front" in the Dec. 6 issue of THE IRON AGE refers to a new type of attrition grinder being developed on the West Coast. We are interested in this development and I wonder if you can inform us of the full name and address of the manufacturer?

HAROLD LARSEN,
Nickel Sales Dept.
International Nickel Co., Inc.,
New York 5

● Experimental work and development is being carried on in conjunction with Matson Navigation Co.'s United Engineering, the motor is a General Electric and some castings have been furnished by Columbia Steel. Full details of this grinder are contained in the West Coast column of the Dec. 6 issue, p. 94.—Ed.

SURFACE FINISHING

Sir:

Please send tear sheets of the following article "Surface Finishing of Beryllium Copper," which appeared in the Nov. 15 issue.—Ed.

WM. L. RUDIN
G & W Electric Specialty Co.,
Chicago 19

● Tear sheets have been mailed.—Ed.

LOW TIN CONTENT ALLOY

Sir:

Please send tear sheets on "New Bearing Alloy Conserves Tin," which appears in the Nov. 29 issue.

K. G. PRESSER,
Chief Metallurgist
National Supply Co.,
Springfield, Ohio

● Tear sheets have been mailed.—Ed.

EN ALLOY SPECIFICATIONS

Sir:

We would like to obtain a copy of the article "British EN Alloy Specifications" by J. H. G. Monypenny contained in the Nov. 15 issue.

HAROLD BIEHL,
Chemist-Metallurgist
Fansteel Metallurgical Corp.,
N. Chicago

● Tear sheets have been mailed.—Ed.

CANE MILL MANUFACTURERS

Sir:

Please advise if you can give us the names of the different cane mill manufacturers in the United States.

C. L. THOMPSON,
President
Thompson Foundry & Machine Co.,
Thomasville, Ga.

● We are sending you a list of them.—Ed.

NICKEL PLATED WIRE

Sir:

We understand there is a bright nickel plated wire being produced today. Can you inform us who is making this wire?

LOUIS SANDERS
Chester Mfg. Co.,
Passaic, N. J.

● Hanover Wire Cloth Co., Hanover, Pa., and Bethlehem Steel Co., Bethlehem, Pa., are makers of this nickel plated wire.—Ed.

ALUMINUM ANODIC COATINGS

Sir:

Please send me a copy of Keller's and Edwards' article on anodic coatings on aluminum that appeared in the Nov. 22 issue.

I. W. MARCOVITCH,
Division Standardizing
Radio Corp. of America,
Camden, N. J.

● Tear sheets of "Performance and Structure of Anodic Coatings on Aluminum" have been forwarded.—Ed.

INCREASED TOOL LIFE

Sir:

In the Nov. 29 issue on the "News Front" page, I came across an item toward the bottom of the page which states that use of a copper cushion between shank and tip of high speed or carbide tipped tools notably increases tool life. Will you please inform me where further information can be had on this subject as to thickness or other characteristics of this so-called copper cushion. I am particularly interested because we are operating a carbide dept. and of course copper cushions in the shape of brazing material have been used from the beginning.

LARRY W. LANG
National Tool Salvage Co.,
Detroit 10

● There was an article in the Nov. 29 issue on "Cushioned High-Cobalt Shaper Tools." We are sending this on to you, together with a previous article on the same subject which appeared in the July 20, 1944 issue. —Ed.

PRECISION-CAST ALLOYS

Sir:

Please furnish us with three copies of the article "Precision-Cast Copper-Base Alloys" by S. Lipson, H. Markus, and H. Rosenthal, appearing in the Nov. 8 issue.

W. E. McKIBBEN,
Research Engineer
Indiana Steel Products Co.,
Chicago 2

● Tear sheets have been mailed.—Ed.

IRON POWDER SIZE

Sir:

We should be glad if you would let us have tear sheets on "Particle Size Analysis of Iron Powders" as published in your issue of May 17.

J. G. CAMPBELL
C. G. Wade Ltd.,
Ealing, W. 13

● Tear sheets have been mailed.—Ed.

STAINLESS STEEL FINISH

Sir:

Could you give us the name of the company that has a method of bright finish on stainless steel? There was an article in your magazine recently regarding this process of a bright finish, and if that process is available in this vicinity, would you please forward the address of the company.

W. H. HAINES,
Plant Manager
L. S. Brach Mfg. Corp.,
Newark 4, N. J.

● The names and addresses of several companies have been forwarded.—Ed.

SCREW MACHINE SETUP

Sir:

Will you kindly let us have a copy of the complete series of the "Setup Charts for Automatic Screw Machines," by J. J. Meadows. We are enclosing a money order for 60¢ U. S. funds to cover the cost.

F. C. CALDWELL,
Chief Draftsman
Ferranti Electric, Ltd.,
Mount Dennis, Toronto 9

● Reprint has been mailed.—Ed.

WHEELABRATOR Swing Table

cleans hoist parts *quickly, thoroughly*

Installation of a Wheelabrator Swing Table at the Ottumwa Iron Works, Ottumwa, Iowa, has resulted in a 25 per cent cut in cleaning costs on mine hoist parts.

The Wheelabrator replaced a large tumbling barrel which was operating 24 hours a day, and by eliminating much of the hand work, reduced the cleaning time to 4 minutes per table load. Equipped with a 66" diameter work table, the Wheelabrator cleans hoist drums, mine car wheels, gear housings and machine brackets. Castings up to 800 pounds are handled in the machine.

The Swing Table also gives the castings a better appearance, makes for easier machining and permits quick inspection, due to complete removal of all sand and scale right down to the virgin metal.

The Wheelabrator Swing Table, a new American development, is designed to meet the need for moderately priced equipment capable of handling a wide range of large and small pieces where daily production does not warrant the purchase of several types of cleaning apparatus. It can be furnished with a 24", 66", 72", or 86" diameter work table.

Let us show you how you can put this machine to profitable use. Write today for full information and new free literature.

American
FOUNDRY EQUIPMENT CO.

510 SOUTH BYRKIT ST.
MISHAWAKA, INDIANA

This Industrial Week . . .

- **Material Shortages Getting Worse**
- **Scrap Demand Outweighs Supply**
- **Ingot Rate Declines to 67.5 Pct**

LABOR and material troubles are giving the steel industry one of its greatest problems since the high wartime peak days, but indications this week point to even greater headaches to come.

Severe winter weather conditions have brought to light the fact that inventories of scrap and coal in the industry are dangerously low. As a direct result of the coal strike in October, steel companies were unable to establish sufficient stockpiles as an insurance against severe weather.

The decline in coal stocks with its consequent reduction in the output of coke or blast furnaces has reduced the flow of steel making iron to a point far below requirements.

The lack of hot metal for steel production has caused most companies to scour the country for iron and steel scrap. This emphasis on scrap will make up for the deficiency in pig iron and has caused scrap supplies to be tighter this week than at any time in several years.

The material shortage situation last week forced Carnegie-Illinois Steel Corp. to curtail its operations in the Chicago district by more than 10 pct below the schedule grade. While 24-hr shutdowns will be normal this week because of the Christmas holiday, the raw material shortages have caused deeper than normal cuts to be made at many steel plants.

Steel ingot output for the country this week is estimated at 67.5 pct, down 12½ points from last week's revised rate of 80 pct. A rebound is expected next week but weather conditions and raw material shortages may make it difficult to reach the recent level of 82 pct capacity.

Customer's fears of a steel strike scheduled for Jan. 14 have caused such a surge of new orders that some mills are literally snowed under. Within the past few days ordering activity has been curtailed because of holiday influences, but previous to that time incoming business depending on the company was running from 10 to 100 pct ahead of shipments.

With steel production falling behind original schedule and with order volume climbing to new highs, deliveries on practically all steel products are even more extended than they were a month ago. With opinion divided as to the probability of a steel strike in January, nevertheless steel consumers attempting complete reconversion are getting far less than their steel requirements.

ON the price front there are consistent reports from reliable sources that OPA may soon revise steel extra allowances. These charges which are in addition to the base price cover special costs for physical and chemical characteristics. It is believed in the trade that substantial advances will be made in some extras to bring them in mind with actual costs incurred by the mills to carry out customer requirements.

It is understood that steel company and union representatives in some districts have met to formulate plans for keeping in operation certain steel mill facilities which, because of their nature, service community utilities. In many steel areas gas from the coke ovens and blast furnaces is furnished to the cities or villages and it is expected that labor-management agreements will be made so as not to interfere with such community services.

The steel industry this year is expected to produce about 80 million tons of steel, a decline of more than 9½ million produced in 1944. Most of this decline was the result of war contract cancellations following VE and VJ-day, as well as curtailments brought about because of the coal strike.

Although steel companies would like to have their officials spend their time in 1946 on production and competitive market problems, present indications are that labor will be the No. 1 problem. Even after the present wage controversy is settled with the probability of a 15 to 20 pct increase, the industry's labor worries will not be over. There is bound to be a request some time in 1946 for some type of a guaranteed annual wage.

A REQUEST and a drive for a guaranteed annual wage will, it is believed, consume considerable time what with negotiations, cross fire and final rejection or compromise. Such a demand, however, will serve to keep the union in the forefront and encourage the support of its members.

The recent stand of President Truman that fact finding boards should consider earnings of companies in wage negotiations has brought out the reason why management was as opposed to his plan. No fact finding board has been named for the steel industry and it is believed in some quarters that efforts towards a settlement of a steel labor controversy or at least a new move for negotiations may cause a trend away from the imminent long and bitter struggle which will result if both parties are not brought closer together.

In addition to substantial freight car awards and inquiries, the nation's railroads are beginning to release orders for passenger car equipment designed to regain some of their lost traffic. From the volume of inquiries now out and those to come, car builders will probably find 1946 one of the busiest years in their history. Whether or not they will obtain the necessary steel remains to be seen, especially in view of the present tightness among products most frequently used for car construction.

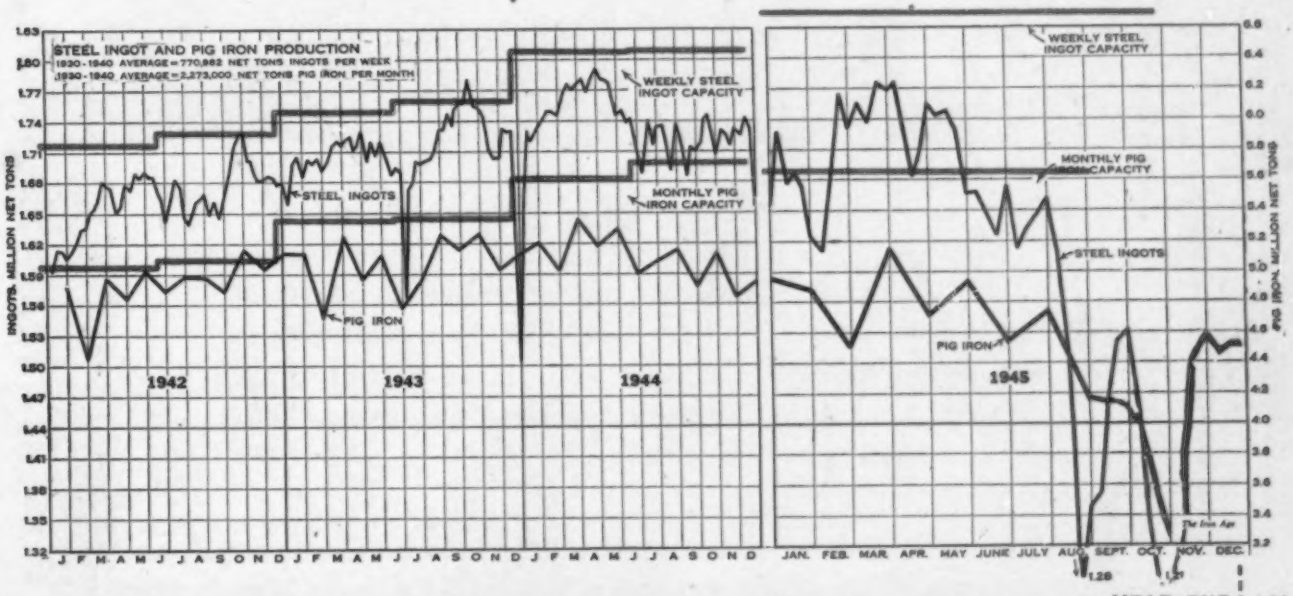
• **FARM DEMAND**—Rural building and farm modernization is at the threshold of extraordinary progress through electrification and installation of many types of household appliances as well as farm machinery operated with electricity, according to a survey of activities throughout the United States reported recently at a meeting in Milwaukee of more than 125 field engineers and representatives of Square D Co. Basing their estimates of the activity ahead on the rapidity with which rural electrification is advancing, the field managers and engineers reported that with farmers today financially better able to satisfy their desire for modern equipment, factories making units are oversold already. It was pointed out that demand for electrical switches for the farm market have multiplied four times in the last seven months.

• **COST OF LIVING UP**—The downward tendency in the cost of living during August and September from the World War II peak in July was halted by a slight upturn in October, according to the Alexander Hamilton Institute. The cost of living index as compiled by the National Industrial Conference Board on the basis of 1923 as 100, was 106.3 in October as compared with 106.2 in September and with 106.9 in July. Although there was a further decline in food prices in October from the wartime high, this was more than offset by a rise in the cost of clothing and sundries. Rents and the cost of fuel and light remained unchanged. The upturn in October is indicative that the basic trend of the cost of living is still upward as the result of the large amount of money in the hands of the people at a time when the supply of goods at the prevailing price level is inadequate to meet requirements.

• **MANUFACTURING ACTIVITY DOWN**—Manufacturing activity in October was at the lowest rate since July 1941, according to the Alexander Hamilton Institute. The rate of decline from September to October, however, was at a slower rate than in preceding months, indicating that it may be nearing the bottom. The price level of manufactured goods rose from September to October but the increase was so small that it provided little of an offset to the curtailment in the quantity of goods manufactured. Consequently, the index of the value of factory output declined from 222.3 in September to 215.1 in October. This carried the value of factory output to a point 16.7 pct below the normal demand as measured by farm income. The index of farm income in 1945 is now estimated at 258.2. No deflation of farm income is in immediate prospect. Consequently, an upturn in the value of factory output is indicated just as soon as reconversion is far enough advanced and labor troubles have quieted down sufficiently to permit the increase in output which is warranted by the present demand.

• **MEXICAN MILL**—Construction of a new rolling mill near Mexico City and proposed additional ingot capacity at Piedras Negras, Mexico, has been revealed by the filing with the Securities and Exchange Commission of a registration statement for 166,667 shares of a new cumulative preferred stock of La Consolidada, S. A., Mexican steel producer. Shieds & Co., American investment bankers, hold a controlling interest in the Mexican concern. Purchasing of equipment for the rolling mill has commenced under the direction of Warren Worthington, Pittsburgh, in line with the recommendations of Arthur G. McKee & Co., Cleveland. It is contemplated that the new mill will roll carbon and alloy bars, light structural shapes and rods, and will represent a new investment of over $1 million. Equipment to be installed includes a 30-in. three high mill, a 21-in. three high three stand mill, a 16-in. three high three stand mill, a 14-in. six stand mill and a 10-in. six stand continuous mill. Initial annual finished product capacity is estimated at 48,000 tons.

• **IRON ORE CONSUMPTION**—Iron ore consumption by U. S. and Canadian furnaces totaled 5,611,627 gross tons last month, compared with 6,882,696 tons in November 1944, the Lake Superior Iron Ore Assn. reported. Furnaces have consumed 69,476,744 tons so far this year, compared with 80,156,826 the same date last year. Total iron ore stocks on hand at U. S. and Canadian furnaces and Lake Erie docks were 44,706,399 gross tons as of Dec. 1, compared with 44,721,674 tons a year ago. Of the total of 195 U. S. and Canadian furnaces, 154 were in blast the first of the month, compared with 169 out of 197 the same date a year ago.


STEEL INGOT AND PIG IRON PRODUCTION
1930-1940 AVERAGE = 770,982 NET TONS INGOTS PER WEEK
1930-1940 AVERAGE = 2,273,000 NET TONS PIG IRON PER MONTH
INGOTS, MILLION NET TONS
PIG IRON, MILLION NET TONS
WEEKLY STEEL INGOT CAPACITY
STEEL INGOTS
MONTHLY PIG IRON CAPACITY
PIG IRON
1942
1943
1944
1945
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
YEAR END 1.24

Steel Ingot Production by Districts and Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
December 18...	78.0	90.5	75.0	81.5	86.0	50.0*	81.0	95.0	101.0	50.0	81.0	70.0	101.0	80.0*
December 25...	66.0	75.0	60.0	69.0	74.0	30.0	69.0	85.0	80.0	42.0	70.0	61.0	80.0	67.5

* Revised

MESTA

ALL required tempers can be produced on Mesta High-Speed Twin Four-High Cold Skin Pass Mills. These mills feature new types of drives and control systems which maintain synchronization during acceleration, deceleration, and at normal operating speeds.

MESTA MACHINE COMPANY

Snow and Cold Gang Up on Steelmaking Operations

Chicago

• • • **Four horsemen** of a steel industry **apocalypse**—scrap, coal, snow, and cold—**rode** together last week to cut the **nation's steel** production and force rolling operations still farther behind schedule.

The specter of a national scrap shortage more serious than any during the war period became more distinct, and began to take its toll in the Chicago district. The district's principal producer, Carnegie-Illinois Steel Corp. was forced to drop operation 11 pct below schedules for the week because of lack of scrap. A complete steelmaking shop, comprising three bessemers and three tilting openhearths, went down at Gary Works and equivalent capacity was suspended at South Works.

Prospects for improvement at the world's two largest steel mills and others in the district were dark, with yard scrap shipments cut in half by snow and cold weather. The basic seriousness in the situation, unlike any during the war, lies in the drying up of scrap production as war plants have closed during the past four months. Reconversion operations at the factories have been slow in starting, leaving no replacement for the scrap tonnage steadily generated during the war.

In addition to the lack of openhearth material, borings and turnings have not been available to step up hot metal production from blast furnaces. Termination scrap has enabled the mills to live from hand to mouth, but delay in release and preparation of this tonnage has prevented building of mill inventories, which are almost universally low.

Efforts to remedy the situation have centered around scouring of remote areas as far distant as Texas and the West Coast. Shipyard termination scrap already has started moving to Chicago from the West Coast despite a freight rate of $14.82 per gross ton. A temporary reduction in this rate to $12.32, scheduled to go into effect Dec. 22, was battled tooth and nail by West Coast steel producers, who feared that as much as 150,000 tons of prime plate and structural scrap requiring little preparation might leave the district. The drain on coal inventories which occurred during the October coal strike has sapped the industry's vitality like a case of influenza, particularly in the Pittsburgh district, which only two weeks ago resumed full coke oven operations. The need for conserving coal will continue thru the winter with prospects of increased shipments by rail dampened by lower mine production during the cold period. This consideration will prevent any great increase in blast furnace operations to offset the scrap shortage.

Heavy snow banks at Buffalo crippled operation in that district last week with a probable hangover into this week's operations adding to production lost over the holiday. Hope that last week's operating rate of 50 pct would be raised to 80 pct this week was a matter of crossing fingers. No real improvement was expected until midnight, Christmas Day. Operations were heavily curtailed at Bethlehem's Lackawanna Plant with only thirty furnaces reported melting Thursday and only four at Republic. Wickwire-Spencer shut its mills four days, from Friday midnight until yesterday morning. Adding to the paralyzation of mill movements by frozen switches and snow-covered sidings, was high absenteeism among workers and a freight embargo on incoming and outgoing shipments. This was later modified to permit movement to and from Black Rock, Tonawanda, and North Tonawanda.

At Cleveland, cold weather resulted in a cut in delivery of natural gas necessary for operation of finishing mills. One major producer reported receiving only 20 pct of his gas quota. Last week's district steelmaking operations dropped to 50 pct as the cut in finishing operations backed up through the metal-making departments, with a probable rate of only 60 pct this week despite warmer weather. Finishing operations were badly crippled at most plants in the Valley District by the gas shortage, although the drop in output was not as severe as at Cleveland.

The first heavy snowfall in 5 yr hit operations in the Birminhgam district, operators there said. Adding to complications in finishing operations was a high rate of absenteeism which dropped product output to lowest levels since the VJ Day realignment, one mill reported.

FROZEN ASSETS: *An estimated 50,000 tons of steel were lost because of the snow storm in Buffalo, Dec. 18. Photo shows snowbound freight car at Bethlehem Steel Co.'s Lackawanna plant, which suspended operations due to 63 in. of snow.*

Non-Integrated Mills Price Action Soon to Be Announced By OPA

Washington

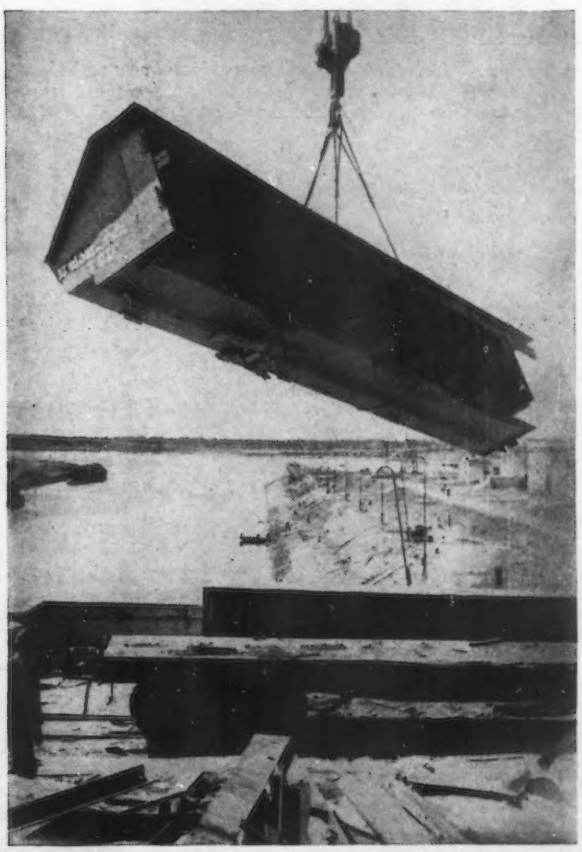
• • • **Amendment to steel pricing regulations which will permit non-integrated producers to apply for exemption from price controls will be announced shortly by OPA.** This is in line with recommendations made at the General Steel Industry Advisory Committee meeting held in New York Dec. 12. A similar proposal, however, was overwhelmingly rejected by steel representatives at the preliminary meeting held at Pittsburgh Dec. 10. The principal objection to such a plan, it was pointed out, was that it would put the non-integrated producers at a competitive disadvantage. Meanwhile, requests for individual price adjustments have been received from more than 20 non-integrated producers.

It was also learned that the extension of time given OPA to consider petition for price relief filed by the non-integrated producers some months ago has been withdrawn. It was hoped that OPA would, by extending industry-wide relief, give succor to the small producers but OPA's refusal to act until fourth quarter financial statements have been filed completely scotched the idea. It is expected that they will appeal to the United States Emergency Court of Appeals after the first of the year.

At a meeting of steel company controllers held in Pittsburgh Dec. 20, plans were discussed which would assure submission of fourth quarter statements at the earliest possible date. It is hoped that the necessary information will be available in Washington at some time within the first two weeks of January.

The small producers who have been harassed at every turn gave serious consideration to taking their case to Congress again. This time the Senate Small Business Committee was to have lent an ear to their woes. However, the project did not materialize and Lauson Stone, president of Follansbee Steel Co., took the case direct to the public in a radio address Dec. 13. He reiterated his previous statement that price relief on any other than industry-wide basis would be "a kiss of death" for the non-integrated producers.

Plans for remedying the snarled steel distribution situation are being discussed by OPA, CPA and OWMR with the price agency strongly contending that price actions alone will not solve the problem.



o o o

RUSSIAN RESTORATION: *A section of a sluice gate arrives at the Nazi-wrecked Svir hydro-electric station from Leningrad.*

o o o

Extend Stockpiling Time

Washington

• • • **SPA has extended the expiration date of Regulation No. 17 which deals with stockpiling of strategic materials from Jan. 3 to April 1, 1946.**

Under the regulation, critical and strategic materials needed by the Army and Navy are transferred to the military stockpile, after the essential needs of the civilian peacetime economy have been satisfied. The screening of surplus property to determine which shall be stockpiled is handled by RFC. The RFC clears questions of civilian deficiency with the CPA and confers with the Army and Navy Munitions Board which makes the final decision as to what shall be stockpiled.

Estimates of civilian deficiencies have not been released by CPA.

Veterans Eager to Work

Springfield, Mass.

• • • **In contrast with** many reports appearing in the press, Frederick G. Marot, supervisor of employment at Westinghouse Electric Co., says that with few exceptions, former employees returning from service in armed forces are definitely eager to get back on the job. He states, however, that few want to work on a third shift the company is endeavoring to build up.

If they previously worked on either of the other two shifts, they may return to the particular one. Mr. Marot's statement refers to those men who served in the ranks, however. Officers in the Army and Navy in many instances are slow to take up former work, presumably because they drew down more money than ever before. These former workers are inclined to defer returning to the old job, preferring to look about for something better.

OPA Counsel Resigns

Washington

• • • **Morris Hershson, New York, special counsel for the OPA Metals Price Branch, has resigned, effective Dec. 31. Since January 1943, Mr. Hershson has had legal responsibility for all pricing actions concerning ferrous products.**

Great Britain Turns to Wood in Face of Steel Shortage

o o o

• • • In view of the critical steel supply situation in Great Britain, wood is being used for making and repairing rolling stock for the railroads. This follows along the same lines of the problems encountered in the United States during the war, when steel was a scarce item and was very carefully doled out to the producers of ordnance equipment. In accordance with WPB directives, gondolas and other rolling railway stock were made and repaired with wood siding.

Woolwich Arsenal, located in the outskirts of London, was Great Britain's No. 1 military supply depot during the war, and has now been converted to peacetime pursuits. It is now occupied with the making and repairing of War Dept. and commercial railway rolling stock. It is planned, however, that at a later date, the former arsenal will become the Army's experimental engineering depot and laboratory for guns and explosives.

The photo, upper right, illustrates the newly cut giant logs of wood being prepared for entry into the saw mill to be cut up for repairing and making rolling stock.

The figure shown at the middle right shows railway trucks being repaired on a production line basis, at the Woolwich Arsenal. The lower right figure shows a closeup view of this repairing operation.

With the steel situation tight throughout the world it can be expected that until the supply increases "short cuts" will be taken.

o o o

Stainless Steel Wire At Waukegan Works

Waukegan, Ill.

• • • **American Steel and Wire Co.**, U. S. Steel subsidiary, will spend more than $1 million to modernize and increase production of stainless steel wire at the Waukegan Works, John R. Gaut, plant general superintendent, announced last week. The project will start immediately.

The improvements will place Waukegan Works among major stainless steel round wire producers in the country. Ultramodern facilities will be housed in a new industrial building providing 100,000 sq ft of floor space. The project includes facilities for a completely integrated unit, drawing and processing, from hot-rolled rod to the finished product. Wire ranging from one-half inch to .004 in. dia. in rounds and shapes will be produced in the new unit. Provisions also will be made for rod storage, heat treating, cleaning, wire drawing and finishing operations, such as grinding, polishing, straightening and cutting, spooling and packaging.

Mr. Gaut estimated the new facilities should be in operation early in 1947.

Exporters to Brazil Require Authorization

Washington

• • • **Exporters sending** goods to Brazil must present shipping documents to Brazilian authorities for legalization before the merchandise arrives at the Brazilian port of destination, the Bureau of Foreign and Domestic Commerce, Dept. of Commerce, has announced. The new regulation becomes effective Dec. 31. Failure to observe the new regulation, will subject the importer to a fine equal to the amount of import duties, the Dept. of Commerce said. The fine will be levied in cases where the necessary shipping documents are missing or must be certified after the vessel carrying the merchandise has arrived in Brazil.

The new ruling revokes the provisions of Circular No. 26 of Aug. 14, 1940, issued by the Brazilian Ministry of Finance, which provided for the clearance of merchandise in cases where the necessary invoices were missing due to war conditions. This facility was extended to the United States by Circular No. 36, published in the Diario Oficial of Oct. 3, 1942, Rio de Janeiro, but is now revoked, effective Dec. 31.

Set New Basing Points For Electrical Sheets

Pittsburgh

• • • **In line with the policy** of expanding the steel industry's basing point system, Carnegie-Illinois, on Dec. 22, established new basing points on four electrical sheet items.

Effective immediately, Chicago and Gary have been named as basing points for U. S. field, armature, electrical, and motor grade electrical sheets. The base prices set for these items are: field, $3.33 per 100 lb on 24 gage material; armature grade, $3.68 per 100 lb for 24 gage material; electrical grade, $4.18 per 100 lb on 24 gage sheets; and motor grade, $5.08 per 100 lb on 24 gage sheets.

The prices established at the new basing points are identical with those already in effect at Pittsburgh except for the addition of a slight freight charge.

New C-I Washington Man

Washington

• • • **L. R. Knapp has been appointed** as Washington sales manager for special accounts, Carnegie-Illinois Steel Corp. He succeeds Harry F. Knapp retired Dec. 1, after 44 years service with the corporation. L. R. Knapp has been with the U. S. Steel subsidiary 12 years. In 1939 he was transferred to Washington from Pittsburgh to assist with the corporation's role in supplying war materials. Prior to coming with the corporation Mr. Knapp had varied experience in export and sales engineering fields. In 1933 he resigned as vice-president of Sheet Piling, Inc., of which he was one of the founders, to accept the position with Carnegie-Illinois.

Keokuk Made Basing Point

Keokuk, Iowa

• • • **Keokuk Electro Metals Co. has** announced a Keokuk basing point on all grades of high silicon silvery pig iron, 14 to 18 pct silicon range, effective at once.

Carload price for 14.01 to 14.50 pct silicon grade is $48.75 per gross ton, f.o.b. cars, Keokuk, plus usual differentials provided in Amendment 1, dated July 21, 1943, to OPA Maximum Price Regulation 405. Shipments from Keokuk will be made on the lowest combination of basing point price plus freight to destination. These base prices, for 14.01 to 14.50 pct silicon iron, are $48.75 per gross ton f.o.b. Keokuk, $45.50 f.o.b. Jackson, Ohio, and $46.75 f.o.b. Niagara Falls, N. Y.

Surplus Aluminum Sale To Alcoa Prohibited

Washington

• • • **Acting, it said,** under a decision of the United States Court of Appeals, Second Circuit, the Surplus Property Administration has issued two orders which prohibit the sale of either primary or secondary aluminum by government disposal agencies to the Aluminum Co. of America without prior approval of SPA.

One order, No. 4, SPA Reg. 4, was issued in view of the court's decision that as of 1940 Alcoa had a monopoly of primary aluminum in violation of law and in view of the usefulness of secondary aluminum in combination with or as a substitute for primary aluminum. Order No. 26 bars RFC from selling to Alcoa or to its subsidiaries aluminum metal in any form or materials, such as aircraft and aircraft parts being acquired primarily for recovery of their aluminum content. The order also bars the sale of more than 5 million lb of aluminum scrap to any individual buyer, including subsidiaries, in any one month with prior SPA approval.

Made Business Assn. Head

Chicago

• • • **T. Albert Potter,** president of the Elgin National Watch Co., Elgin, Ill., has been elected president of the Illinois Manufacturers Assn.

Other officers include R. J. Koch, president of Felt & Turrant Mfg. Co., Chicago, first vice-president; Arnold J. Wilson, president of General Time Instrument Corp., La Salle, Ill., second vice-president; and E. F. Mansure, president of E. L. Mansure Co., Chicago, treasurer.

New Steel Warehouses

Cleveland

• • • **U. S. Steel Supply Co.**, warehouse subsidiary of U. S. Steel Corp., has purchased nine acres on Bessemer Ave. in southeast Cleveland where it will build a new warehouse. The new structure will provide approximately double the operating space of present quarters, which will be abandoned when the new building is complete. Work will begin immediately and the new plant is expected to be in operation the latter part of 1946.

Contract Settlements In Chicago Area Set Record for November

Chicago

• • • **Contract termination** settlements by the Chicago Ordnance District set a new record in November when 347 cases were wiped off the slate, according to Col. Slezak, district chief. In October 226 cases were settled, and 291 in September.

The 347 cases closed last month involved the cancellation of $185,428,765 worth of ordnance production, Col. Slezak said. Claims submitted by contractors on these cases totaled $19,057,642, but subsequent negotiations with the district reduced the amount paid out by the government to $17,617,796, or 92.4 pct of original claims.

As of Dec. 1, the district had only 387 contract termination cases remaining to be completed, and the expectation is that most of them will be settled by the end of the month. Of the pending cases, 160 represent canceled ammunition contracts, 133 tank-automotive contracts, 86 artillery contracts, and 8 small arms contracts.

"Credit for the progress this district has made toward final settlement of its terminations belongs to our contractors," Col. Slezak stated. "Their foresight in building and training capable terminations organizations well before the end of the war is paying off dividends today. Almost without exception they have given the highest degree of cooperation and have been extremely prompt in submitting inventories and claims."

Largest of the November settlements was a Studebaker Corp. contract, involving canceled orders for Army trucks and spare parts amounting to $94,482,028. Both Studebaker and ordnance officials attribute the speed of the large settlement to a pre-termination agreement reached in May in which advance determination was made to methods of inventory disposition and inspection, and the establishment of various rates and percentages used in computing the company's charges.

Alcoa Professorship Established at CIT

Pittsburgh

• • • **The Aluminum Company of America** has marked the establishment at Carnegie Institute of Technology, "The Aluminum Co. of America Professorship of Light Metals," at a dinner held here recently.

F. N. Rhines

The Professorship will extend scientific and engineering knowledge of fundamental importance through research. By strengthening educational work in the Dept. of Metallurgical Engineering, it will enable Carnegie Institute of Technology to render more effective service in the education of men for the engineering, production, research, and management phases of industry.

Frederick Nims Rhines, a member of the staff of the Dept. of Metallurgical Engineering and of the Metals Research Laboratory since 1934, has been appointed the first Professor of Light Metals. One of the most progressive of the American physical metallurgists, Professor Rhines has aided materially in developing metallurgy into a truly professional branch of modern engineering.

Activities of the Professor of Light Metals are similar to those of other professors in engineering and science. He will provide instruction in the metallurgy of light metals to undergraduate students, conduct research of a fundamental nature such as has characterized the work of the Metals Research Laboratory, and direct a continuing program of research relating to light metals and to scientific principles of recognized importance to the light metals industry. He will also supervise work of graduate students of light metals in the interest of an expanded program of graduate study in this field. The effectiveness of this work will be enhanced by the cooperation of the company in exchanging data and information.

Diesel Engine Group Elects 1946 Officers

Chicago

• • • **E. J. Schwanhausser,** vice-president of Worthington Pump & Machinery Corp., was elected president of Diesel Engine Manufacturers Assn. at the association's annual meeting, held Dec. 11 in Chicago.

Gordon Lefebvre, president of Cooper-Bessemer Corp. and J. E. Peterson, vice-president of General Machinery Corp., were elected vice-presidents of the association.

Reelected as treasurer was Robert H. Morse, Jr., vice-president and general manager of Fairbanks, Morse & Co.

Harvey T. Hill, executive director of Diesel Engine Manufacturers Assn., was also reelected to serve through 1946.

New directors who were elected are A. W. McKinney, vice-president of National Supply Co., and G. F. Twist, vice-president and general manager of Atlas Imperial Diesel Engine Co.

Continuing on the Board of Directors are George W. Codrington, vice-president of General Motors Corp.; Charles E. Brinley, chairman of the board, Baldwin Locomotive Works; Robert E. Friend, president of Nordberg Mfg. Co.; Norris H. Schwenk, president of Busch-Sulzer Bros.

POTENTIAL DYNAMITE: *The Chance Vought XTBU-1 Sea Wolf torpedo bomber that wasn't completed soon enough for combat service. Produced by Consolidated Vultee, Allentown, Pa., the plane is powered by a Pratt & Whitney R-2 800 engine and has a top speed of over 300 mph.*

Dept. of Commerce Survey Shows Plant Expenditures in 1945

Washington

• • • **The Dept. of Commerce** and the Securities and Exchange Commission today made public jointly the results of a survey of plant and equipment expenditures by private concerns in 1945. This survey, which is the first of a regular quarterly series, shows that American industry, exclusive of agriculture, will spend about $5.7 billion for new plant and equipment during 1945, more than in any year since 1942 but still considerably below the peak year 1941.

Of this total, approximately $5.2 billion will be spent by corporations, the remainder by unincorporated business. In addition, American industry will spend another $600 million during the year on old or used plant and equipment.

There was a steady increase in the amount of such expenditures over the year, with estimated expenditures in the fourth quarter about three-fourths higher than in the first quarter.

The $5.7 billion expenditure on new plant and equipment for 1945 may be compared with $8.3 billion in 1941 and $5.2 billion in 1939. Adjusting for differences in price level, plant and equipment expenditures in 1945 will be less than two-thirds of 1941. The much smaller private investment in 1945 as compared with 1941, in spite of the very great increase in the level of business activity is, of course, attributable to the war effort. Scarcities and allocations effectively prevented industry from engaging in a large amount of new capital investment, particularly in the first half of the year, so that the usual peacetime relationship between private investment and business activity does not hold.

For the war period as a whole, depreciation and depletion charges were somewhat in excess of private expenditures on plant and equipment. During this period, much of the capital formation which occurred was for purposes of munitions and related production and was financed largely by the Government, representing an expenditure of public funds rather than private investment.

The survey indicates that the anticipated expenditures on new plant and equipment in the last half of the year would be substantially above the actual expenditures in the first half. Thus actual expenditures, estimated at $1.0 billion and $1.3 billion in the first and second quarters may be compared with anticipated expenditures of $1.6 billion and $1.8 billion in the third and fourth quarters. This increase reflects the lifting of controls and gradual easing of materials resulting from the end of the war.

$200 Million Expansion Program Planned By Chemical Industry

New York

• • • **Two hundred million dollars** will be spent by the chemical industry in the next 3 yr on plant expansion to meet the constantly growing demand for its products, according to "Chemical and Engineering News," publication of the American Chemical Society.

Basing its forecast on an estimate by H. L. Derby, president of the Manufacturing Chemists' Assn. and of the American Cyanamid and Chemical Corp., the journal attributes the huge size of the expansion program to technological advances as well as to economic factors.

Current shortages emphasize the necessity for such large-scale expansion in the chemical industry, it is declared. Serious deficiencies are reported in caustic soda, soda ash, sodium phosphates, nickel salts, sal ammoniac, potassium and sodium bichromate, potassium permanganate, potassium chlorate, fertilizer and insecticide materials, certain paint ingredients, turpentine and rosin.

Labor difficulties have figured in some of these shortages, and in products where strikes have curtailed supplies the situation will improve later, the journal says, but for many other scarce chemicals the only solution is greater production.

It is predicted that one of the most important fields of expansion will be the manufacture of plastics, since "Even though plastics production was expanded from 300,000,000 pounds in 1939 (in terms of synthetic resins) to almost 800,000,000 pounds in 1944, plant facilities are being expanded in vinyls, melamine and other amino resins; vinylidene, chloride, polystyrene, ethyl cellulose and possibly other types. One manufacturer, the Dow Chemical Co., is expending $15,000,000 for additional synthetic resins capacity."

A $2,000,000 outlay by the American Cyanamid Co. to enlarge melamine facilities at Wallingford, Conn.; a large appropriation by the Bakelite Corp. for increased vinyl sheet capacity at Bound Brook, N. J., and the General Electric Co. plan for a new factory at Anaheim, Calif., for the manufacture of alkyd coating resins, also are cited by the journal.

Current civilian demand for synthetic coating materials is far below normal, owing to reconversion delays, labor difficulties and the time lag between the start of civilian goods production and their final state of manufacture preceding coating application, but the potential demands for coating resins are enormous.

"Still," it is asserted, "there is a sound basis for belief that this group in the future will reach a market saturation point sooner than molding resins."

COMING EVENTS

Jan. 7-11, 1946—SAE Annual Meeting and Engineering Display, Book-Cadillac Hotel, Detroit.

Jan. 21-23—1946 Convention of Institute of Scrap Iron & Steel, Inc., Congress Hotel, Chicago.

Feb. 4-7—National Meeting, American Welding Society, Hotel Cleveland, Cleveland.

Feb. 4-8—National Metal Exposition, Public Auditorium, Cleveland.

Feb. 4-8—National Metal Congress, Public Auditorium, Cleveland.

Feb. 4-8—American Society for Metals, Statler Hotel, Cleveland.

Feb. 4-8—National Meeting, Iron and Steel Institute of Metals Div., American Institute of Mining and Metallurgical Engineers, Statler Hotel, Cleveland.

Feb. 6-8—American Industrial Radium and X-ray Society, Hollenden Hotel, Cleveland.

Feb. 25-28—Annual Meeting, American Institute of Mining and Metallurgical Engineers, Chicago.

Feb. 25-Mar. 1—Spring Meeting, American Society for Testing Materials, Pittsburgh.

Apr. 3-5—SAE National Aeronautical Meeting, Hotel New Yorker, New York.

Apr. 8-12—ASTE Exposition, Cleveland Public Auditorium, Cleveland.

Apr. 11-13—Spring Congress, Electrochemical Society, Inc., Birmingham, Ala.

Apr. 25-26—Twenty-ninth AIME Annual Open-Hearth Steel and Blast Furnace and Raw Materials Conferences, Chicago.

June 24-28—Forty-ninth Annual Meeting, American Society for Testing Materials, Buffalo.

Discusses Problems Involving Patents; Outlines Solution

Washington

• • • A program for increasing the efficiency of the United States Patent Office through employment of improved administrative procedures and a larger number of higher paid personnel to insure a more thorough research before patents are granted and greater selectivity in their issuance, was outlined recently by Casper W. Ooms, commissioner of patents.

Addressing the National Assn. of Manufacturers Symposium on Patents in New York City, Mr. Ooms said that no patent is "any better than its prospects in patent litigation," and that the improvements which he believes can be effected in Patent Office procedures would do much to reduce the number of court controversies over patents.

"Every good patent is disparaged and depreciated by every bad one that is issued," according to Mr. Ooms who said, "We in the Patent Office must find means to prevent the issuance of patents that find their only claim to validity in the presumption of validity that arises from their issuance."

There are a large number of technical problems with respect to the prosecution of patent applications that can be improved, in the opinion of the patent commissioner who said that his office is now engaged in a consideration of the revision of Patent Office procedures.

He said that many of the current problems concerned with the review and issuance of patents, except that pertaining to an increased and more highly paid personnel, can be resolved without additional legislation and he hopes that by mere administrative action some of the forseeable benefits will be realized within a year.

Mr. Ooms said that he was opposed to the adoption of any system of compulsory licensing of patents because such a system would "be deadening to experiment and development," and would "eliminate the value of a patent as a competitive weapon of the small businessman."

However, he said there was need for a "restricted form of compulsory licensing, a system in which licensing can be compelled only when the more immediate need of the people outweighs the general interest which is so well served by the patent system."

Mr. Ooms also said that he did not favor numerous bills which have been proposed in Congress which would extend the statutory life of patents that have run through the war on the theory that the interruption of civilian production has deprived the patentee of a part of the patent term fixed by law at 17 yr. Such legislation if enacted, would only "bring the patent system under more criticism and into greater disrepute."

"Too many persons have given too much in this war to permit the singling out of any group of property owners for special treatment," Mr. Ooms said.

"No man can assess the damage with which the war has burdened the entire people. To attempt to correct the small injustices that patent owners have suffered will but create further inequalities. In addition the uncertainties of patent term would cause new problems in industrial plans. This would merely confuse a system that is now working well and with some small repairs may again merit the unequivocal approval of a people whom it has served so well."

Regarding the "question of what to do about so-called suppressed or abused patents," Mr. Ooms said this subject "has been exaggerated out of all proportion to the actual frequency of the wrongs complained of."

"I shall not debate the issue as to whether any patents have been suppressed. I think a few have been suppressed by their owners; many thousands have been suppressed by the obsolescence that so quickly overtakes so many inventions in this rapidly moving age."

He said that he was becoming increasingly impressed with the need for creation of a specialized tribunal to try patent cases because of the increasing technical complexity of the matters involved although he formerly opposed creation of such a court.

Sets 1500 Cars a Day Goal

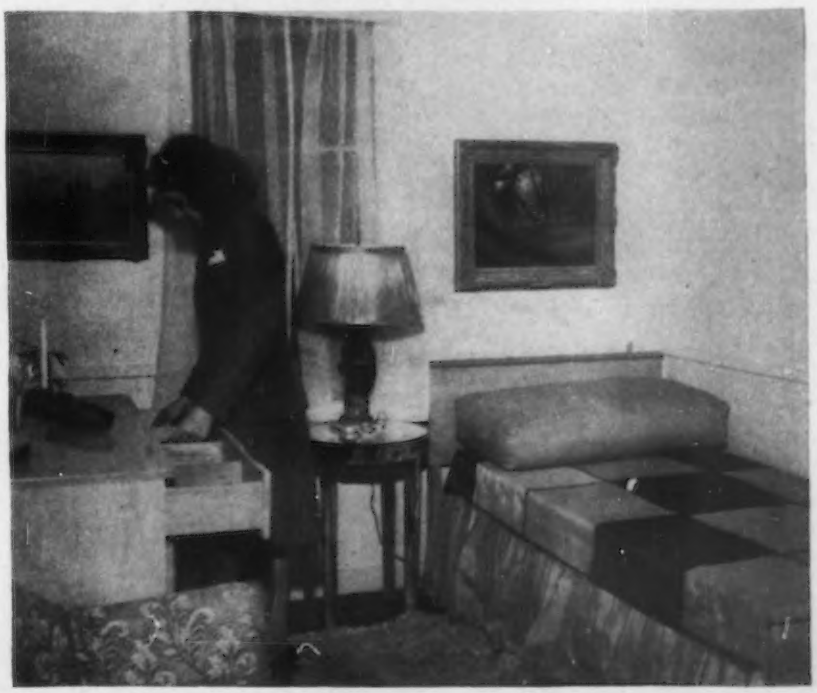
Detroit

• • • Kaiser-Frazer Corp. plans to employ between 8000 and 11,000 by midsummer, when its Willow Run plant is expected to be producing upwards, according to the company announcement, 1500 Kaiser and Frazer automobiles daily.

The two cars, an all-purpose tractor and the new Rototiller will be unveiled to the American public in major cities beginning in January. Hiring of factory workers will begin shortly at Willow Run.

The company plans to manufacture its own bodies, and the first of a series of 900-ton presses are now being made for the company, with installation expected to be fairly soon.

CHEAP AND COZY: *Prefabricated houses, produced under lend-lease contracts which have been canceled, are available to the U. S. public. The houses contain two bedrooms, living room, kitchen and bath. The house sells for $1899 plus a $500 packaged plumbing unit. Photo shows view of bedroom, which measures 11 ft 5 in. by 9 ft and 3 in.*



New York Central Buys 18-8 Double Bedroom Cars from E. G. Budd Co.

Philadelphia

• • • **Edward G. Budd, president of the Edward G. Budd Mfg. Co., revealed today that approximately 80 pct of the 112 stainless steel railroad cars ordered from the company by the New York Central System will be sleepers.**

The 112-car order is composed of cars with double bedrooms and cabins, lounge facilities, observation facilities, diners, combination kitchen and lounge cars, and baggage-dormitory cars.

In addition, Budd is now working on an order for 127 passenger cars for the New York Central and the total business on the books of the company with the New York Central now approximates $22 million. Deliveries are scheduled to begin in the fall of 1946.

The newly ordered equipment will be used to make up eight additional stainless steel trains for the New York Central fleet.

The double bedroom sleeping cars of Budd design offer a choice of sleeping accommodations lengthwise or crosswise of the car, contain room-width windows, a wardrobe, and a fully-enclosed toilet and lavatory. Another feature is the convertibility of two adjacent double bedrooms to provide a master room of greater size, capacity and apartment comfort than heretofore available in any sleeping car.

Strike Date Causes Rush for Deliveries

Pittsburgh

• • • **Steel consumers are making every effort possible to get steel mill deliveries moved up to a date prior to Jan. 14 in order that their work can progress while the steel industry strikes. Examples of this are evidenced in practically every product line, but especially in the construction items such as concrete bars and structurals.**

With both structural and concrete bar demand so very strong and production so low, the chances of any schedules moving up are extremely slim. In fact, both bar production and fabrication of structurals are falling behind the tentative schedules set up when business was booked.

As to structural fabricators, very few are working much above 50 pct of their rated capacity, mainly because of steel supplies. One fabricator in this area is submitting quotations on the basis of making deliveries four weeks after steel is received at the fabricating yards. Customers, however, have no idea how slowly the steel is coming from the mills. Consequently, while fabricated delivery schedules are tentatively set up for fairly rapid execution, actual deliveries are being extended further and further each week because structural receipts at the yards are slow and uncertain.

"BEACH UMBRELLA": *A portable, light-weight radar unit developed for the U. S. Marine Corps by the Westinghouse Electric Corp. Designed for beachhead use, the complete unit weighs only 400 lb, can be dismantled and packed in four 100-lb. cases and has a range of 80 miles.*

GE Buys Plant Of American Armament

Washington

• • • **Authorized sale of the American Armament portion of the government-owned aircraft plant, Allentown, Pa., to the General Electric Co., Schenectady, N. Y., for a cash purchase price of $200,000 has been announced today by RFC.**

The plant, about 15 yr old, acquired from the American Armament Co. by condemnation, was converted with adjoining property to the manufacture of PBY-2 airplanes for the Navy. It was operated under lease by the Consolidated Vultee Aircraft Corp. during the war.

The government's investment in land and building amounts to nearly $196,000. Machinery and equipment, acquired upon government acquisition of the plant, represents an additional investment of approximately $450,000. The machinery and equipment which has been declared surplus is not being acquired by General Electric, but will be removed from the plant at government expense for sale to interested purchasers.

General Electric plans to convert the plant to the manufacture of electric sinks, RFC said, and has indicated an employment expectancy of about 160 workers at the outset of operations, with future employment possibly reaching 265 people.

Construction Steel . . .

New York

• • • **The American Institute of Steel** Construction, Inc., reports that the November bookings of fabricated structural steel for bridge and building construction by members of the industry, totaled 107,684 tons. This compares with 109,182 tons for the preceeding month, and 62,437 tons for November, 1944.

November shipments for bridge and building construction were 59,935 tons as compared with 59,373 tons for the same month last year.

The reported tonnage available for future fabrication at Nov. 30, has increased to 304,901 tons.

Following is the complete tabulation of bookings and shipments:

	Tonnage Reported to AISC 1945	1944
CONTRACTS CLOSED		
January	51,678	45,109
February	64,656	37,477
March	79,730	27,836
April	96,913	61,498
May	52,545	34,840
June	103,604	56,239
July	76,878	90,043
August	97,033	44,740
September	138,727	51,133
October	109,182	80,521
November	107,684 (1)	62,437
Totals	978,630	591,873
SHIPMENTS		
January	55,367	35,163
February	47,879	42,938
March	58,821	41,351
April	62,236	44,495
May	71,532	50,651
June	68,358	43,000
July	68,131	45,328
August	68,729	55,205
September	60,691	57,541
October	65,821	61,554
November	59,935	59,373
Totals	687,500	536,599

Four month backlog ..... 304,901 tons

(1) The concerns reporting this month represent 73.4 pct of the total average bookings of the industry during the years 1923-1925.

New York

• • • **Fabricated steel awards** this week included the following:

170 Tons, St. Paul, Minn., St. Thomas College science building.

Unstated Tonnage, Des Moines, Iowa, Ford Motor Co., parts building. Bids in on general contract, Dec. 21.

1250 Tons, Battle Creek, Mich., Kellogg Co. warehouse, to Duffin Iron Co., Chicago.

1200 Tons, Alma, Wis., Dairyland Cooperative Assn., power house, to Duffin Iron Co., Chicago.

500 Tons, Chicago, Chicago Fire Brick Co. kiln sheds, to American Bridge Co., Pittsburgh.

320 Tons, Wallingford, Conn., bridge, State Highway Dept. Unnamed fabricator, through M. A. Gammino Construction Co., Providence.

275 Tons, Pittsfield, Mass., General Electric Co. plant, to Haarmann Steel Co., Holyoke, Mass.

250 Tons, Detroit, service building for Chrysler Corp., to Ingalls Iron Works, Birmingham.

250 Tons, Detroit, Falls Spring & Wire Co. factory, to R. C. Mahon Co., Detroit.

130 Tons, Webster, Mass., Anglo Fabric Co. plant, to Bethlehem Steel Co., Bethlehem, Pa.

• • • **Fabricated steel inquiries** this week included the following:

7000 Tons, Van Nuys, Calif., assembly plant, General Motors Corp., Chevrolet Div.

2380 Tons, Dayton, Ohio, bakery and warehouse, Loose-Wiles Biscuit Co.

1685 Tons, Clifton, N. J., manufacturing plant, Federal Telephone & Radio Corp.

1662 Tons, Jamaica, N. Y., store building, R. H. Macy & Co.

1290 Tons, Kenonah, Ala., sinter plant extension, Tennessee Coal, Iron & Railroad Co.

1144 Tons, Memphis, Crump Stadium, City of Memphis.

1000 Tons, Omaha, Neb., rock barges, U. S. Engineers Office.

1000 Tons, Staten Island, N. Y., Arthur Kill Station, Staten Island Edison Co.

750 Tons, Oceanport, N. J., grandstand roof, Monmouth Park Jockey Club.

700 Tons, Cedar Rapids, Iowa, road builders, La Plante-Choate Mfg. Co.

624 Tons, San Jose, Calif., bridge, State of California.

503 Tons, Tonawanda, N. Y., plant addition, Eastern States Cooperative Milling Corp.

492 Tons, Bessemer, Ala., shop building, W. L. Costan & Sons.

475 Tons, Minneapolis, farm machinery parts, Superior Separator Co.

465 Tons, Gary, Ind., Gary Screw & Bolt Co., factory addition.

418 Tons, Trenton, N. J., warehouse, Westinghouse Electric Corp.

390 Tons, New Brunswick, N. J., manufacturing and office building, American Coating Mills.

380 Tons, Tarboro, N. C., beam spans, North Carolina Highway Dept.

322 Tons, Cincinnati, garage building, owner unknown.

313 Tons, Garland City, Ark., pile sections, St. Louis & Southwestern Railway Co.

300 Tons, Baltimore, miscellaneous group of tanks for Lever Bros. Co., Cambridge, Mass., Stone & Webster Co., Boston, engineers.

300 Tons, Cambridge, National Research Corp. plant.

300 Tons, Chicago, factory building, L. B. Foster Co.

300 Tons, Baltimore, plant extension, Lever Bros. Co.

275 Tons, Fitchburg, Mass., plant addition, National Lead Co., Magnus Div.

260 Tons, Chicago, factory and office building, Pyramid Metals Co.

250 Tons, Winstead, Conn., building, Winstead Hardware Mfg. Co.

250 Tons, Bedford Park, Ill., factory, General Scientific Corp.

250 Tons, Lyndhurst, N. J., factory building, Italian Cooking Oil Co.

200 Tons, Clifton, Mo., Wabash Railroad, beam span bridge No. 420.

200 Tons, Providence, Narragansett Electric Co., turbo generator foundation.

• • • **Reinforcing bar** inquiries this week included the following:

2500 Tons, Houston, Tex., 19 story apartment hotel, swimming pool, six-story garage and food market, Stone & Webster Co., N. Y., engineers. Hedrick & Lindsley, Houston, architects.

Army Surpluses Offered

Washington

• • • **Tractors, cranes,** shovels and compressors are among 11,081 items of used construction equipment which the Army Engineers have reported as surplus for disposal by RFC.

The surplus items, which include 4385 pieces of heavy machinery, represent excess equipment used by division engineers on war construction projects throughout the continental United States. A small percentage was returned before V-J Day from projects in Newfoundland, Alaska and Greenland. The bulk of the equipment is reported to be in fair mechanical condition. Many pieces are in need of repair but all are repairable. Among the items are: cranes, shovels and accessories, 574; tractors (all classes), 1246; scrapers, 249; welding machines, 977; compressors, 527; light plants and generators, 812.

SURPLUS STOCK: *One of the instances where oversupply is a boon. Photo shows some of the vast quantity of material hidden in the Forest of Dean, where a large chemical warfare depot was concealed, ready in case gas was used by the enemy.*

Foremen's Group Says Conciliation Service Needs Revitalizing

• • • Terming "totally inadequate" the recommendations for improving the U. S. Conciliation Service made by the recent Labor-Management Conference, A. C. Croft, president of the National Foremen's Institute, today issued a call for industry and the general public to get behind a 7-point program aimed at turning the service into an effective instrument for minimizing labor strife.

Mr. Croft declared that as presently set up, the U. S. Conciliation Service "lacks all the prerequisites essential to success—competent personnel, dynamic leadership, adequate funds, effective operating techniques, a clear vision of its objectives, and the support of both management and labor." Several of the proposals agreed upon at the L-M Conference, he asserted, actually assure the perpetuation of some of the very abuses most in need of elimination.

Mr. Croft's proposals for vitalizing the service into an effective instrument for curbing strikes include:

(1) Taking it out of the Dept. of Labor and making it an independent agency, so that industry need no longer fear its domination by the labor-minded officials of the Government's Labor Department.

(2) Turning it into a 3 or 5-man board of mediation, so that it might command the talents of the country's top mediators. Today the service has room for only one outstanding personality, its director, and hence does not attract the services of other outstanding men in the field of conciliation.

(3) Giving it statutory authority, clearly setting forth its functions and purposes. All that stands behind the service today is the power given the Secretary of Labor "to act as mediator and to appoint commissioners of conciliation in labor disputes whenever in his judgment the interests of industrial peace may require it to be done. Without a definite statutory responsibility to fulfill, the service has frequently wandered far afield from its basic function.

(4) Getting rid of the very large number of "broken-down labor hacks" and "AFL pensioners" among the Commissioners of Conciliators and assuring their replacement by capable men. This means subjecting appointments to some sort of civil service test; currently the service is exempt from civil service requirements and as a result is loaded down with a great deal of deadwood.

(5) Appointment of an advisory committee, with equal representation from industry, labor and the public.

(6) Setting up effective internal administrative machinery; currently the service has no manual of operations, no means for keeping each commissioner abreast of latest developments, no effective method for sharing experiences, techniques and tactics.

(7) Expanding, decentralizing and raising the salaries of the service's personnel. It needs at least 100 more commissioners, ought to have nine regional offices instead of five, and must pay salaries considerably higher than the present average $5000 in order to obtain capable men.

Mr. Croft pointed out that the L-M Conference's recommendation that the service be exempt from civil service requirements would not only prevent it from purging the ineffective and superannuated members of its staff but also from recruiting only men who could prove their ability to conciliate labor disputes.

Likewise, the conference's recommendation that the service remain a part of the Dept. of Labor, he stated, would perpetuate industry's reluctance to call in the service when a strike threatens. Currently, less than 25 pct of all requests for a commissioner of conciliation come from management.

Approve Cast Iron Soil Pipe Wage Increases

Washington

• • • Acting under the wage-price Executives Orders of Aug. 18, Stabilization Administrator John C. Collet on Dec. 12 authorized WLB to approve applications for wage increases in the cast iron soil pipe industry, provided the Board finds that wage increases will be effective in the recruitment of manpower in the industry. At the same time, OPA was directed to make an immediate study to determine if a price increase would be necessary in the event wage increases are granted.

The Executive Orders authorized approval of wage or salary increases found to be "Necessary to insure full production in an industry . . . which is essential to reconversion and in which existing wage rates or salaries are inadequate to the recruitment of needed manpower." Judge Collet said it has been found that the present supply of cast iron soil pipe is substantially below current and prospective requirements.

It was pointed out that wage increases for the industry may also be approved on the grounds set forth in the Executive Orders and OPA wage and salary regulations of Dec. 5 which are applicable to all industries. The effect of the Stabilization Administrator's order, it was added, is to provide a further and exceptional basis on which WLB may approve increases for this industry.

STRIKE VOTE: *Workers at the General Electric Co., Schenectady, line up to take part in a strike vote called by the United Electrical, Radio and Machine Workers of America (CIO) to decide whether they will go out on strike sometime after Jan. 1.*

Warehouses Report Steel Stocks Low

Chicago

• • • Steel warehouses are following the lead of the mills in informally rationing available stocks among old customers, a survey of local distributors shows.

Nothing as formal as the mill allotment system has been worked out because of the large number of customers which the warehouses serve, but buyers are receiving only a portion of their stated requirements. Steel users who abandoned their prewar sources of supply and new customers are receiving cool treatment and little steel.

Like other mill customers, the warehouses are rationed in the tonnage they receive from producers, receiving an allotment usually based on 1940-41 buying. An avowed effort by most mills to win back to direct mill buying users of large tonnages who turned to the warehouses in the war and early reconversion period has cut the proportion of mill output received by the warehouses. The warehouses are responding, in most cases, by refusing to accept heavy orders from big buyers which would clean out their stocks. This is a reversal from the stand taken under the Controlled Materials Plan when assured replenishment under War Production Board quotas guaranteed the future.

Initial reconversion buying from warehouses was reminiscent of the early days of the defense program when large war contractors virtually cleaned out warehouse stocks in their efforts to secure immediate delivery. Mindful of the bleak year of 1942 when the warehouses received only 9.9 pct of mill output instead of a usual 13 to 14 pct, the warehouses this time are turning away most of the big orders so as to take care of their many small customers who will still be with them when steel again is plentiful.

Despite these precautions, warehouse stocks today are low and spotty although not so low as at the end of 1942, it is estimated. Strip and light gage sheets have virtually disappeared, as well as galvanized sheets which have been sparse throughout the year. There is wide variation in availability among bar types and sizes, but light structurals are almost universally scarce. Plates are in relatively good supply, and warehouses stocking heavy structurals are taking care of good customers satisfactorily. Most alloys are easily obtainable.

Industrial Briefs...

• NEW COMPANY — The Sherman Industrial Electronics Co. of Belleville, N. J., was recently incorporated under the laws of New Jersey. The new company is an engineering and manufacturing organization devoted to industrial electronic heating equipment, and is prepared to manufacture induction and dielectric heating units and their production accessories. Its incorporators and officers have long been active in the electronic heating field.

• TO REPRESENT — The Power Piping Div. of the Blaw-Knox Co. has announced the appointment of Flagg, Brackett & Durgin, of Boston, as sales representatives in Massachusetts, Maine, New Hampshire, Vermont and Rhode Island.

• RESEARCH LAB. — Southern Research Institute, Birmingham, has opened an engineering research laboratory in charge of Dr. E. N. Kemler, head of the institute's engineering research div.

• EXPANSION MOVE—I. Schumann & Co., Cleveland, have purchased a large tract of land in the industrial section of Cleveland. The land is being improved with modern brick, concrete, and steel buildings for warehouse, smelting and office purposes.

• MECHANICAL LAB.—Work has begun at New Providence, N. J., on the construction of a new mechanical research laboratory for Air Reduction Sales Co. and subsidiary companies. The laboratory will have a floor area of 78,000 sq ft, the size of the average city block. Two small auxiliary service buildings will be adjacent.

• NEW CELANESE PLANT — Celanese Corp. of America plans to locate a Celanese products plant at a cost of over $10,000,000 near Rock Hill and Fort Mill, S. C. Rock Hill's Celanese plant will employ about 2500 workers when it begins operation.

• INSTRUMENT CO. BUYS—General Instrument Corp., Elizabeth, N. J., has purchased the capital of the F. W. Sickles Co., Chicopee, Mass. The Chicopee plant will be expanded, tenders already having been made for acquisition of more manufacturing space and equipment.

• SOUTHERN OFFICE—Rochester Ropes, Inc., is opening a southern branch at 2409 First Ave., S. Birmingham, with William G. Moses as general sales manager. The company's factory is located at Culpeper, Va.

• JOIN INSTITUTE—Three new members have been added to the technical staff of the Midwest Research Institute—Harold L. Stout, Coletta A. Reece, and Joan T. Woehler.

• BIDS FOR YARD—William S. Newell, president of the Bath Iron Works Corp., reports he and the Todd Shipyards Corp. have submitted a bid for the east yard of the New England Shipbuilidng Corp., South Portland, Me. The Maritime Commission is expected to act on the bid shortly.

• ST. LOUIS OFFICE—Ferro Enamel Corp., Cleveland, has announced opening of a St. Louis office. The new offices, located in the Arcade Bldg., will serve as district headquarters and will be in charge of J. A. Thompson, who has represented Ferro Enamel Corp. in the St. Louis district for many years.

• FORMS SUBSIDIARY—The Ajax Electric Co., Philadelphia, manufacturers of electric salt bath furnaces, has recently announced the formation of a subsidiary organization known as the Ajax International Co. This new firm is to handle the parent company's export business, principally in the Latin-American countries. Officers for the new company are Dr. G. H. Clamer, chairman of the board; William Adam, Jr., president; Leon B. Rosseau, vice-president; John E. Haig, secretary; E. A. Ginkinger, treasurer.

MACHINE TOOLS

. . . News and Market Activities

Observers See Gloomy Outlook Pending the Customary March Upturn

Cleveland

• • • With the end of the year at hand, it is obvious to all concerned that 1945 was a year of down-trend in demand for the machine tool builder. While the war continued through April, order volume continued a steady downward trend from month to month. Shipments were high at $41,000,000 in June, and from there on, both demand and rate of shipment dropped.

Cancellations in April, rose to $21,000,000, while unfilled orders hovered around $296,000,000, and with the war in Europe practically ended, less than 10 pct of the outstanding business was canceled. In August, when the Japs gave up the ghost, an additional $24,000,000 was shaved off, less than 5 pct of unfilled orders.

By September, sources in the trade were saying that the machine tool industry had already skimmed the cream off its reconversion orders through the ordering that had been done in the last six months of the war, pointing to the relatively small number of cancellations as evidence.

Various forecasts have already been made for 1946, many of them in the immediate neighborhood of $25,000,000, and some confident observers have gone as far out on the limb as $350,000,000. Presumably these figures assume about $100,000,000 foreign business and the balance domestic. Sources in the trade report that foreign business will come primarily from Belgium, France, Russia, China, and a little from India and Australia.

Competent observers among the builders seem to feel that the industry will continue its downward trend until March of next year, when the turn will be for the better. March is usually a strong month, and in some respects, may come as close to any boom the industry has had in the form of reconversion business.

In the year ahead, there are many problems to be met, not the least of which is costs. In the case of materials costs have gone up 10 to 40 pct and, along with them, labor costs have risen 38 pct. Manufacturers have not had any price relief, but the more optimistic operators in the industry seem to expect that there will be some forthcoming.

Warner & Swasey Equipment

Washington

• • • RFC has announced that the plant operated by Warner & Swasey Co., Cleveland, in the production of machine tools and engine parts is available for sale or lease. The plant, exceptionally well located on a two-acre site at 5701 Carnegie Ave., can readily be adapted to the manufacture of precision parts or to similar types of production. The building contains 101,000 sq ft of floor space, has facebrick walls, steel sash and steel roof trusses on steel columns.

Machinery and equipment includes boring and grinding machines, electric platform trucks, rotoblast cleaning machines, and several hundred pieces of furniture and fixtures, including cafeteria equipment. A number of cranes, ranging in capacity up to 10 tons, are available.

Detrola Disposes Of Machine Tool Rights

Detroit

• • • International Detrola Corp. has sold its machine tool manufacturing interests to Gisholt Machine Co., Madison, Wis.

The sale includes transfer of the manufacturing of Fastermatic turret lathes and superfinishing machines, but excludes the equipment, lands and buildings of Detrola's plant at Elkhart, Ind., which are to be prepared at once for machining and assembly work under subcontracts.

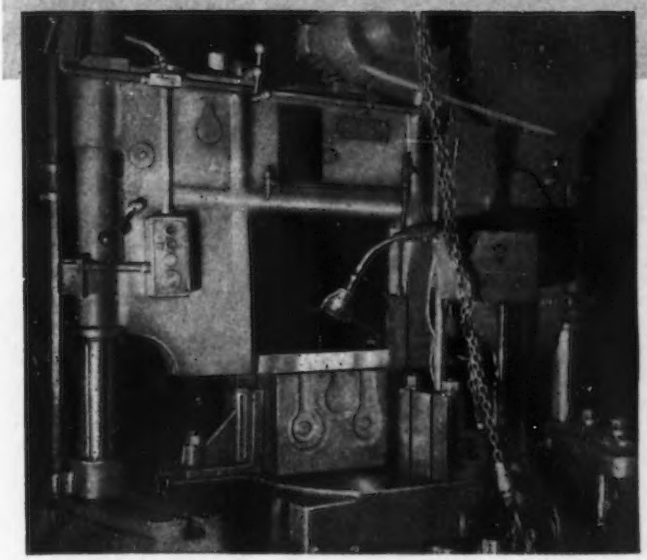
International Detrola, it was indicated by C. Russell Feldmann, president, expanded its machine tool sales from around $5 million in 1940 to $24 million in 1942 at the height of the war-tooling period. The company recently sold its Indianapolis plant, which manufactured turret lathes.

"In supplying automatic and heavy duty turret lathes and other machine tools to equip major automobile, aircraft and other plants for their prewar and wartime performance, our machinery plants made an impressive record," Mr. Feldmann said. He recalled that Detrola's Indianapolis plant, which manufactured turret lathes, was sold two months ago.

"After the tooling peak, they turned to making military tractor transmissions, large outboard propulsion units, mobile airfield hoists, and other munitions," Mr. Feldmann continued. "As long as the national need continued we continued to produce the things needed most urgently by the armed services and other war contractors. Our plants also delivered a volume of tools required for reconversions. But as an increasing proportion of our attention has been demanded by our other manufacturing operations in the home appliance field, it has become expedient to dispose of the turret lathe and superfinisher manufacturing end of our business to a widely recognized company which is admirably suited to carry on."

International Detrola now operates plants in Michigan, Indiana, Ohio, Illinois, Tennessee and California, manufacturing home and automobile radio receivers, automatic record changers, refrigerating and air conditioning units, domestic refrigerators, radio parts and cabinets, cedar chests and sewing cabinets. Foreign manufacturing affiliates or subsidiaries are in Montreal, Quebec, Brantford, Ont., and Buenos Aires, Argentina, and a general export headquarters has been established in New York. Detrola also owns the Rohr Aircraft Corp., Chula Vista, Calif., now working against the large background of civilian aircraft sub-assemblies.

Marvel Saws Cut off Hours from Die Maintenance Time



Hubbard & Company, Pittsburgh, manufacturers of pole line hardware, picks, hammers and other drop forged specialties, use MARVEL Saws to eliminate tedious hours in making and maintaining their giant forging dies. Not only do these saws do all regular cutting-off of steel for the machine shop, die blocks for die shop and exact size billets for the forge shop, they also materially cut the cost of die maintenance.

Previously, it was necessary to plane the face of dies being reworked. This was a long and tedious job because the die face is always work-hardened with hard spots that had to be chipped or ground out before the planer tool could make a cut. Now with MARVEL Saws, the face of a die is speedily and accurately "skinned"—a thin slice is sawed off just behind the hard spots, after this speedy "skinning" and a single facing cut on the planer, the die is ready for the die sinker. This modern MARVEL method is saving Hubbard a lot of dies, materials, labor and machine time.

Below (left) is a Model 9A MARVEL High Speed Production Saw, with automatic bar push-up, which automatically cuts off billets to exact size (ends fin waste), and, a No. 18 MARVEL Giant Hydraulic Hack Saw for cutting-off large bars and billets and trimming dies in sizes up to 18" x 18" cross section.

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 Bloomingdale Ave.
Chicago 39, U. S. A.

Eastern Sales Office:
225 Lafayette St., New York 12, N. Y.

NONFERROUS METALS

. . . News and Market Activities

Tin Outlook Improved

New York

• • • **British metal publications** have recently been scouting the statements that have emanated from the Tin, Lead and Zinc Div. of CPA as to the length of time required before supplies of tin are expected to be available in appreciable quantities. These papers point to the results of early exploration of the Malay Peninsula and the discovery of certain pig tin stocks there and some dredges which can be put into tin production without too much delay for reconstruction.

They also point to the reserves of tin held in the U. S. and are unable to comprehend why these are not usable for current reconversion needs. Some 2000 tons of pig tin are not available for allocation by the Tin, Lead and Zinc Div. since they are Navy supplies earmarked for that service.

•

Copper from Stockpile

New York

• • • **It has been reported** that the present size of the copper stockpile has dropped to 494,000 tons at the end of November, a loss of about 4.5 thousand tons during the month. These figures include sizable stocks in Chile owned by the Office of Metals Reserve. It is also revealed that approximately 40,000 tons of copper will be released from the stockpile for consumer needs during January. This is expected to be somewhat below actual requirements.

It is recalled that statistics released by the Copper Institute recently indicate that domestic mine production of copper is inadequate to supply the current rate of deliveries to consumers. While the copper stockpile is considerable, it may be found desirable by the Office of Metals Reserve to renew the foreign copper purchase contracts which ended at the end of October.

Meanwhile, although strikes have been called for by votes at the plants of several of the Connecticut Valley brass mills, there is apparently no immediate desire by union members or their officials to go out on strike. Leaders of the CIO-Union of Mine, Mill and Smelter Workers are seeking to continue negotiations with officials of the American Brass Co., Scovill Mfg. Co. and The Chase Brass and Copper Co.

•

Zinc Shipments Increase

New York

• • • **Refined zinc in the** stockpile totaled 259,000 tons at the end of November, it has been reported, consisting of 176,000 tons of Grade A and 85,000 tons of Grade B. These figures reflect an increase of 12,000 tons of zinc during the month.

Zinc production during October reached 142,087 tons, 57.4 pct of capacity, an increase of nearly 14,000 tons compared with September. Shipments reached 145,151 tons during October and exceeded the previous month by more than 11,000 tons.

For the first ten months of the year, as compared with the same period last year, production totaled 1,432,321 tons, an increase of 306,000 tons. Shipments during the period totaled 1,436,279 tons, an increase of nearly 320,000 tons.

•

Auto Lead Quotas Down

New York

• • • **Lead allocations** for passenger car batteries and tetraethyl lead during the first quarter of 1946 have been reduced this week by a revision of the lead conservation order M-38, it has been announced by CPA. Passenger car battery quotas will be reduced from 26.5 pct of 1944 consumption during the current quarter to 22 pct of last year's quota. Tetraethyl lead producers have been cut down to 80 pct of the estimated lead consumption in the last quarter of 1945. This is expected to require 12,000 tons of lead during the quarter.

Quotas for the manufacture of industrial batteries, collapsible tubes and cable covering will continue unchanged. The modification of the order also included a revocation of the chemical lead conservation order M-384 and the inclusion of its restrictions in the basic lead conservation order.

The trade reports that the lead stockpile has dropped gradually to about 81,500 tons at the end of November. Lead imports during this quarter of the year and next are expected to be down considerably from last quarter and the move was taken by CPA to protect essential needs for reconversion. With the stoppages in automotive production caused by labor-management conflict it is presumed that neither restrictive action is likely to cause any hardship in the progress of reconversion.

Peru Plans $10 Million Expenditure for U.S. Highway Machinery

Washington

• • • **Peru will spend** at least $10 million for highway construction equipment in the next 5 yr, according to Sr. Eduardo A. Salgado, assistant director of the Peruvian Highway Dept., and Sr. Juan Quirago, the Department's chief designing engineer. These engineers have just arrived in Washington as the guests of the Office of Inter-American Affairs. They expect to spend three months here visiting road building machinery plants and studying U. S. highway construction methods. The American Road Builders' Assn. and the Public Roads Administration are cooperating in their tour.

"Peru has embarked on a 5-yr highway building program that will involve an expenditure of over $50,000,000," they announce. "Of this amount, at least 20 pct will go for equipment and machinery. Twenty years ago, Peru had less than 2000 kilometers of usable highways. Today the Republic has nearly 32,000 kilometers, and the 5-yr program will extend it much further."

The Peruvian section of the Pan American Highway has been completed. It extends from the border of Ecuador to the border of Chile and more than half of the 2936 kilometers have already been asphalted. The visitors added that the Pan American Highway across Colombia from Venezuela to Ecuador had also been completed.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, del'd (Min. 10,000 lb)	15.00
Aluminum pig	14.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb. contained Be	$17.00
Cadmium, del'd	90.00
Cobalt, 97-99% (per lb)	$1.50 to $1.57
Copper, electro, Conn. valley	12.00
Copper, electro, New York	11.75
Copper, lake	12.00
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$ 2.25
Iridium, dollars per troy oz.	$90-$100
Lead, St. Louis	6.35
Lead, New York	6.50
Magnesium, 99.9 + %, carlots	20.50
Magnesium, 12-in. sticks, carlots	27.50
Mercury, dollars per 76-lb flask, f.ob. New York	$109 to $112
Nickel, electro	35.00
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per oz.	$35.00
Silver, New York, cents per oz.	71.11
Tin, Straits, New York	52.00
Zinc, East St. Louis	8.25
Zinc, New York	8.65

Remelted Metals

(Cents per lb)

Aluminum, No. 12 Fdy. (No. 2)	9.00 to 10.00
Aluminum, deoxidizing No. 2, 3, 4	7.25 to 10.00
Brass Ingot	
85-5-5-5 (No. 115)	13.25
88-10-2 (No. 215)	16.75
80-10-10 (No. 305)	16.00
No. 1 Yellow (No. 405)	10.25

Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded Shapes	Rods	Sheets
Copper	20.87	....	20.37
Copper, H.R.	....	17.37	....
Copper drawn	....	18.37	....
Low brass, 80%	....	20.40	20.15
High brass	....	....	19.48
Red brass, 85%	....	20.61	20.36
Naval brass	20.37	19.13	24.50
Brass, free cut	....	15.01	....
Commercial bronze, 90%	....	21.32	21.07
Commercial bronze, 95%	....	21.53	21.28
Manganese bronze	24.00	....	28.00
Phos. bronze, A, B, 5%	....	26.50	26.25
Muntz metal	20.13	18.87	22.75
Everdur, Herculoy, Olympic or equal	....	25.50	26.00
Nickel silver, 5%	....	28.75	26.50
Architect bronze	19.13	....	....

Aluminum

(Cents per lb., subject to extras on gage, size, temper, finish, factor number, etc.)

Tubing: 3 in. O.D. x 0.065 in. wall 2S, 40c. (½H); 52S, 61c. (O); 24S, 67½c.

Plate: 0.250 in. and heavier; 2S and 3S, 21.2c.; 52S, 24.2c.; 61S, 22.3c.; 24S, 24.2c.

Flat Sheet: 0.188 in. thickness; 2S and 3S, 22.7c. a lb.; 52S, 26.2c.; 61S, 24.7c.; 24S, 26.7c.

2000-lb. base for tubing; 30,000-lb. base for plate, flat stock.

Extruded Shapes: "As extruded" temper; 2000-lb. base, 2S and 3S, factor No. 1 to 4, 25.5c.; 14S, factor No. 1 to 4, 35c.; 17S, factor No. 1 to 4, 31c.; 24S, factor No. 1 to 4, 34c.; 53S, factor No. 1 to 4, 28c.; 61S, factor No. 1 to 4, 28½c.

The factor is determined by dividing perimeter of shape by weight per lineal foot.

Wire Rod and Bar: Base price; 17ST and 11ST-3, screw machine stock. Rounds: ⅛ in., 28½c. per lb.; ½ in., 26c.; 1 in., 24½c.; 2 in., 23c. Hexagonals; ¼ in., 34½c. per lb.; ½ in., 28½c.; 1 in., 25½c.; 2 in., 25½c. 2S, as fabricated, random or standard lengths, ¼ in., 34c. per lb.; ½ in., 25c.; 1 in., 24c.; 2 in., 23c. 24ST, rectangles and squares, random or standard lengths, 0.093-0.187 in. thick by 1.001-2.000 in. wide, 33c. per lb.; 0.751-1.500 in. thick by 2.001-4.000 in. wide, 29c.; 1.501-2.000 in. thick by 4.001-6.000 in. wide, 27½c.

Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb. or more, 46c. a lb.; 25 to 90 lb., 56c.; less than 25 lb., 66c.

NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

Copper, Copper Base Alloys

OPA Group 1†

No. 1 wire, No. 1 heavy copper	9.75
No. 1 tinned copper wire, No. 1 tinned heavy copper	9.75
No. 2 wire, mixed heavy copper	8.75
Copper tuyeres	8.75
Light copper	7.75
Copper borings	9.75
No. 2 copper borings	8.75
Lead covered copper wire, cable	6.00*
Lead covered telephone, power cable	6.04
Insulated copper	5.10*

OPA Group 2†

Bell metal	15.50
High grade bronze gears	13.25
High grade bronze solids	11.50*
Low lead bronze borings	11.50*
Babbitt lined brass bushings	13.00
High lead bronze solids	10.00*
High lead bronze borings	10.00*
Red trolley wheels	10.75
Tinny (phosphor bronze) borings	10.50
Tinny (phosphor bronze) solids	10.50
Copper-nickel solids and borings	9.25
Bronze paper mill wire cloth	9.50
Aluminum bronze solids	9.00
Soft red brass (No. 1 composition)	9.00
Soft red brass borings (No. 1)	9.00
Gilding metal turnings	8.50
Contaminated gilded metal solids	8.00
Unlined standard red car boxes	8.25
Lined standard red car boxes	7.75
Cocks and faucets	7.75
Mixed brass screens	7.75
Red brass breakage	7.50
Old nickel silver solids, borings	6.25
Copper lead solids, borings	6.25
Yellow brass castings	6.00
Automobile radiators	7.25
Zincy bronze borings	7.00
Zincy bronze solids	8.00

OPA Group 3†

Fired rifle shells	8.00
Brass pipe	7.25
Old rolled brass	6.75
Admiralty condenser tubes	7.25
Muntz metal condenser tubes	6.75
Plated brass sheet, pipe reflectors	6.25
Manganese bronze solids	7.00[1]
Manganese bronze solids	6.00[2]
Manganese bronze borings	6.25[1]

OPA Group 4†

Refinery brass	4.50*

*Price varies with analysis, [1] Lead content 0.00 to 0.40 per cent. [2] Lead content 0.41 to 1.00 per cent.

Other Copper Alloys

Briquetted Cartridge Brass Turnings	8.625
Cartridge Brass Turnings, Loose	7.875
Loose Yellow Brass Trimmings	7.875

Aluminum*

Plant scrap, segregated

2S solids	8.00
Dural alloys, solids 14, 17, 18, 24S	4.00
25S turnings, dry basis	3.00
Low copper alloys 51, 52, 61, 63S solids	7.25
turnings, dry basis	5.75

Plant scrap, mixed

Solids	4.00
Turnings, dry basis	2.75

Obsolete scrap

Pure cable	8.00
Old sheet and utensils	6.00
Old castings and forgings	5.00
Pistons, free of struts	5.00
Pistons, with struts	3.00
Old alloy sheet	5.00

Magnesium*

Segregated plant scrap

Pure solids and all other solids, exempt Borings and turnings	1.50

Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings	2.00
Grade 2 solids	3.00
Grade 2 borings and turnings	1.00

*Nominal.

Zinc

New zinc clippings, trimmings	6.50
Engravers, lithographers plates	6.50
Old zinc scrap	4.75
Unsweated zinc dross	5.00
Die cast slab	4.50
New die cast scrap	4.45
Radiator grilles, old and new	3.50
Old die cast scrap	3.00

Lead

Deduct 0.55c. a lb. from refined metal basing point prices or soft and hard lead including cable, for f.o.b. point of shipment price.

Nickel

Ni content 98+%, Cu under ½%, 23¢ per lb.; 90 to 98% Ni, 22¢ per lb. contained Ni.

ELECTROPLATING ANODES AND CHEMICALS

Anodes

(Cents per lb., f.o.b. shipping point in 500 lb. lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	25½
Electrodeposited	18½
Rolled, oval, straight	19½
Curved	20½
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	23½
Zinc, cast, 99.99, 15 in. or longer	16½
Nickel, 99 per cent plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver, 999 fine	
Rolled, 100 oz. lots, per oz.	80

Chemicals

(Cents per lb., f.o.b. shipping point)

Copper cyanide, 1-5 bbls.	34.00
Copper sulphate, 99.5, crystals, bbls.	7.75
Nickel salts, single, 425 lb. bbls., frt. allowed	13.50
Silver Cyanide, 100 oz. lots, per oz.	0.6083
Sodium cyanide, 96 per cent, domestic, 100 lb. drums	15.00
Zinc cyanide, 100 lb. drums	32.00
Zinc sulphate, 89 per cent, crystals, bbls., frt. allowed	6.35

SCRAP

. . . News and Market Activities

Scrap Industry Hopes, While Snowbound

New York

• • • The heavy snowfall during the past week has reduced scrap shipments to a record low point. No price changes have been reported, and the barometer still reads, "Demand continues very strong, exceeding supply; Prices hold firm at ceiling."

Ten thousand tons of landing mat scrap were sold at Norfolk, Dec. 20, with 4000 tons awarded to Butler Iron and Steel, Butler, Pa., at $13.60 (5c above ceiling) and the remaining 6000 tons awarded as 2000-ton lots to three ceiling price bidders (by drawing lots).

PITTSBURGH—The scrap situation in this area has not changed appreciably for the past several weeks. In fact, if anything, demand has increased and both bad weather and limited scrap supplies have accentuated the severeness of the situation. One dealer here contemplated seriously shutting down the operation of part of his yard facilities for the remainder of the year, because of the uncertainty of incoming shipments.

•

CHICAGO — Continued cold weather and snow has slowed yard preparation and shipment in the face of short mill inventories. Blast furnace operations have been stepped up to provide additional hot metal at mills where coal inventories permit, but need for conserving coal will limit this alternative. Remote area buying activities, which already are resulting in shipments from the West Coast, will be extended by increased tonnages from the Texas area, it is indicated.

•

DETROIT—Demand continues without abatement for all grades of scrap. At the same time, the unseasonable weather which prevailed last week, the slackening in general activity due to the holiday season, and the presence of year-end tax factors have combined to slow down shipments. The slow, almost invisible increases in factory scrap production, have had a severe effect on local tonnage, resulting in considerably less shipments outside of the area than is customary.

•

NEW YORK—The heavy snowfall in this area has greatly hampered scrap shipments this past week. The general situation remains unchanged in that demand far exceeds supply and prices continue firm at ceiling. The trade is viewing with apprehension the impending steel strike threat. Charles Dreifus Co. of this city has been awarded 2700 gross tons of landing mat scrap with a bid of $14.29 —with $13.09 the second highest bid. This bid is slightly less than the 2000-ton sale reported a couple of weeks ago at a price of $14.72.

BUFFALO—Movement of scrap still is retarded by the series of storms that buried the city's principal yards and railroad sidings in four to six feet of snow last week. Even truck shipments have been impossible because of street conditions. Most noteworthy market development is an urgent inquiry for cast scrap from foundries seeking to expand production but unable to obtain increased pig iron shipments.

•

BOSTON—A tight situation resulting from reduced production, labor supply and near zero weather has been aggravated by the snow making placing and shipping of freight cars uncertain. In addition, bad going on roads has disrupted the limited truck shipments of cast and low phos. plate to foundries. The scrap market is about at flat, as it could be and still be designated as such.

•

ST. LOUIS—Receipts of scrap iron in the St. Louis market are estimated to be off as much as 50 pct compared with a week earlier. The dwindling supply is due primarily to heavy snow and low temperatures in the St. Louis area. Mills' inventories are decreasing and they are eager to buy in anticipation of continued cold weather. The price situation is strong.

•

CINCINNATI—A preholiday quietude pervades the district scrap market. The undertone, however, continues strong with dealers still bidding strong for available material. Melters with apparently sufficient supplies on hand are withholding further commitments until inventory periods are past. Prices are still at ceiling and yard supplies are light. Production scrap continues to be very light while termination and country scrap tends less.

OPA Acts to Check Ceiling Violations

Washington

• • • Charging that there are certain types of price ceiling violations, OPA has told its field offices to make a careful check on prices being paid for iron and steel scrap. OPA declared that because of a tight supply situation there has recently developed on the part of certain dealers, brokers and consuming mills a tendency to bid prices above the ceiling for unprepared scrap, even though the scrap moves directly to the consumer from the shipping point where purchased.

It was pointed out that where scrap is purchased for shipment directly from a producer to a consumer, a dealer or broker paying over the ceiling price violates the scrap regulation which forbids the payment of prices above the ceiling by consumers or their brokers.

The pricing agency said that the violations, in certain instances, stem from the fact that there is no ceiling on a sale of scrap to a dealer when the scrap moves directly into a dealer's yard. There are rigid ceilings, however, it was added, on all sales to consumers or brokers.

It was explained that when scrap is shipped directly to a consumer, the dealer actually is acting as a broker and the established ceilings apply to such purchases as well as to the sale of such scrap.

"In the great demand recently evinced for landing mat scrap sold by the Army at Norfolk, Va., the latest attempt to evade the regulation was a bid by a dealer-broker for one lot of scrap at a price above the ceiling on condition that a second lot be sold to the same bidder at the ceiling," OPA said. "This bid would be proper if both lots were being shipped directly to the dealer's yard.

"However, the dealer is reported to have offered a part of the scrap purchased to a consuming mill for direct shipment. This was a violation of the regulation. The device of splitting bids, one above the ceiling on the condition that the other be obtained at the ceiling, was an evasion of the regulation through the device of a tying-in arrangement which actually established an average price above the ceiling for the combined bids."

Gulf Chapter Elects

Galveston, Texas

• • • Bernard Schaenen, of American Iron & Metals Inc., Dallas, has been elected president of the Gulf Coast chapter of the Institute of Scrap Iron & Steel Inc. at a meeting held here recently, succeeding Max Clairfield, of Sampson Machinery & Supply Co. Inc., Houston. Other officers are: first vice president, Jacob Gachman, of St. Louis Waste Material Corp., Fort Worth; second vice president, Sidney Byer, of Houston Compressed Steel Corp., Houston; and secretary-treasurer, Cyril Coguenhem, of Luria Bros. & Co. Inc., Houston.

IRON AND STEEL SCRAP PRICES

Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages. Where asterisks are used on quotations below, this indicates a ceiling price to which must be added brokerage, fee and adjusted freight.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bdld. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
Hvy. break cast.	16.50*
No. 1 cupola	20.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Rolled steel wheels	24.50*
Low phos. bil. crops	25.00*
Low phos.	22.50*
RR. malleable	22.00*

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels, turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy. forge	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Rails 3 ft. and under	22.25*
Locomotive tires, cut	$23.75 to 24.25
Cut bolsters & side frames	21.75 to 22.25
Angles & splice bars	22.25*
Standard stl. car axles	24.25 to 24.75
No. 2 steel wheels	23.25*
Couplers & knuckles	23.25*
Agricul. malleable	22.00*
RR. malleable	22.00*
No. 1 mach. cast.	20.00*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Clean auto cast.	20.00*
Cast iron carwheels	20.00*

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	20.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Scrap rails	21.00*

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

No. 1 hvy. melting	$15.05*
No. 2 hvy. melting	15.05*
No. 1 and 2 bundles	15.05*
Busheling	15.05*
Turnings, shovelings	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast, chem. bor.	$13.06 to 14.15*

Truck delivery to foundry

Machinery cast.	21.00 to 23.51*
Breakable cast	21.57 to 21.87*
Stove plate	20.00 to 23.51*

DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New busheling	17.32*
Flashings	17.32*
Mach. shop turn.	12.32*
Short shov. turn.	14.32*
Cast iron borings	13.32*
Mixed bor. & turn.	12.32*
Low phos. plate	19.32*
No. 1 cupola cast.	20.00*
Charging box cast.	19.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Automotive cast	20.00*

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	$13.50 to 14.00
Mixed bor. & turn.	13.75*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Cast, charging box	19.00*
Hvy. axle forge turn.	18.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
Billet crops	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

ST. LOUIS

Per gross ton delivered to consumer:

Heavy melting	$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut	$18.50 to 19.00
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	19.00*
Grate bars	15.25*
Brake shoes	15.25*
RR. malleable	22.00*
Cast iron carwheels	20.00*
No. 1 mach'ery cast	20.00*
Breakable cast	16.50*

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 busheling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast	20.00*
Stove plate	19.00*
Steel axles	18.50*
Scrap rails	18.50
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00
Rails 3 ft. & under	21.00*
Cast iron carwheels	17.50 to 18.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 busheling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shovel. turn.	17.00*
Cast iron borings	16.00*

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	13.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn.	12.33*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Charging box cast	19.00*
Store plate	19.00*
Clean auto cast	20.00*
Unstrip. motor blks.	17.50*
Cl'n chem. cast bor.	14.32*

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	14.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
Stove plate	19.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron car wheels	20.00*
RR. coil & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
RR. malleable	22.00*
No. 1 busheling	19.25*

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel.	16.50*
No. 1 busheling	19.50*
Steel axle turn.	19.00*
Low phos. billet and bloom crops	24.50*
Cast iron borings	15.50*
Mixed bor. & turn.	14.50*
No. 2 busheling	17.00*
No. 1 machine cast	20.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	19.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Railroad malleable	22.00*
Elec. furnace punch	22.00*

SAN FRANCISCO

Per gross ton delivered to consumer:

RR. hvy. melting	$15.00 to 15.75
No. 1 hvy. melting	15.00 to 15.75
No. 2 hvy. melting	14.00 to 14.75
No. 2 bales	12.50 to 13.25
No. 3 bales	8.50 to 9.25
Mach. shop turn.	7.00
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast.	19.00 to 21.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$12.00 to $13.00
No. 2 hvy. melting	11.00 to 12.00
No. 2 bales	10.00 to 11.00
No. 3 bales	9.00 to 10.00
Mach. shop turn.	4.50
No. 1 cupola cast.	19.00 to 21.00

SEATTLE

Per gross ton delivered to consumer:

RR. hvy. melting	$10.00
No. 1 & No. 2 hvy. melting	10.00
Elec. furn. 1 ft. und.	$14.00 to 15.00
No. 1 cupola cast.	20.00*

HAMILTON, ONT.

Per gross ton delivered to consumer:

Heavy melting	$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	13.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

Comparison of Prices . .

[Advances over past week in Heavy Type; declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.]

Flat-Rolled Steel: (cents per pound)	Dec. 25, 1945	Dec. 18, 1945	Nov. 20, 1945	Dec. 26, 1944
Hot-rolled sheets	2.20	2.20	2.20	2.10
Cold-rolled sheets	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.70	3.70	3.70	3.50
Hot-rolled strip	2.10	2.10	2.10	2.10
Cold-rolled strip	2.80	2.80	2.80	2.80
Plates	2.25	2.25	2.25	2.10
Plates, wrought iron	3.80	3.80	3.80	3.80
Stain's c-r strip (No. 302)	28.00	28.00	28.00	28.00
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes.	$5.00	$5.00	$5.00	$5.00
Tinplate, electrolytic	4.50	4.50	4.50	4.50
Special coated mfg. ternes	4.30	4.30	4.30	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.25	2.25	2.25	2.15
Cold-finished bars	2.75	2.75	2.75	2.65
Alloy bars	2.70	2.70	2.70	2.70
Structural shapes	2.10	2.10	2.10	2.10
Stainless bars (No. 302)	24.00	24.00	24.00	24.00
Wrought iron bars	4.40	4.40	4.40	4.40
Wire and Wire Products: (cents per pound)				
Bright wire	2.75	2.75	2.75	2.60
Wire nails	2.90	2.90	2.90	2.55
Rails: (dollars per gross ton)				
Heavy rails	$43.00	$43.00	$43.00	$40.00
Light rails	45.00	45.00	45.00	40.00
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$36.00	$36.00	$36.00	$34.00
Sheet bars	36.00	36.00	36.00	34.00
Slabs, rerolling	36.00	36.00	36.00	34.00
Forging billets	42.00	42.00	42.00	40.00
Alloy blooms, billets, slabs	54.00	54.00	54.00	54.00
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.15	2.15	2.15	2.00
Skelp	1.90	1.90	1.90	1.90

Pig Iron: (per gross ton)	Dec. 25, 1945	Dec. 18, 1945	Nov. 20, 1945	Dec. 26, 1944
No. 2 foundry, Phila.	$27.59	$27.59	$27.59	$25.84
No. 2, Valley furnace	25.75	25.75	25.75	24.00
No. 2, Southern, Cin'ti	26.19	26.19	26.19	24.44
No. 2, Birmingham	22.13	22.13	22.13	20.38
No. 2 foundry, Chicago†	25.75	25.75	25.75	24.00
Basic, del'd eastern Pa.	27.09	27.09	27.09	25.34
Basic, Valley furnace	25.25	25.25	25.25	23.50
Malleable, Chicago†	25.75	25.75	25.75	24.00
Malleable, Valley	25.75	25.75	25.75	24.00
L. S. charcoal, Chicago	42.34	42.34	42.34	37.34
Ferromanganese‡	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.
‡ For carlots at seaboard.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$20.00	$20.00	$20.00	$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh	20.00	20.00	20.00	20.00
No. 1 cast, Philadelphia	20.00	20.00	20.00	20.00
No. 1 cast, Chicago	20.00	20.00	20.00	20.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$7.50	$7.50	$7.50	$7.00
Foundry coke, prompt	9.00	9.00	9.00	8.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	12.00	12.00	12.00	12.00
Copper, Lake	12.00	12.00	12.00	12.00
Tin, Straits, New York	52.00	52.00	52.00	52.00
Zinc, East St. Louis	8.25	8.25	8.25	8.25
Lead, St. Louis	6.35	6.35	6.35	6.35
Aluminum, virgin, del'd.	15.00	15.00	15.00	15.00
Nickel, electrolytic	35.00	35.00	35.00	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	14.50	14.50	14.50	14.50

Composite Prices . .

[Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943 issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.]

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Dec. 25, 1945	2.44076¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One week ago	2.44076¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One month ago	2.44076¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One year ago	2.21189¢ per lb.	$23.61 per gross ton	$19.17 per gross ton

	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1945	2.44076¢ Oct. 2	2.38444¢ Jan. 2	$25.37 Oct. 23	$23.61 Jan. 2	$19.17	$19.17
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17	$15.67 Oct. 24
1943	2.25513¢	2.25513¢	23.61	23.61	19.17	$19.17
1942	2.26190¢	2.26190¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 8
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 9
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 3

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 28, 1941 issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

STEWART

THE BEST INDUSTRIAL FURNACES MADE

A TYPE FOR EVERY NEED

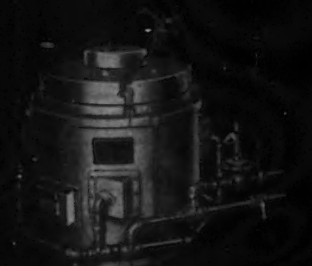
In addition to large units designed to meet specific production requirements, STEWART also builds these famous

STANDARD INDUSTRIAL FURNACES

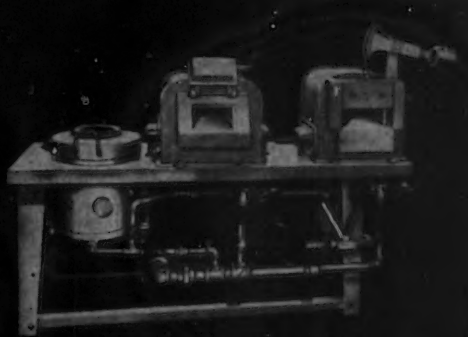
SEMI-MUFFLE OVEN FURNACE

ROUND POT FURNACE

OPEN SLOT FORGE



STATIONARY METAL MELTING FURNACE



TRIPLE PURPOSE COMBINATION

SMALL FORGE

AIR DRAW RECIRCULATING FURNACE

HEAVY PORTABLE OVEN FURNACE

BENCH OVEN FURNACE

A letter, wire or 'phone call will promptly bring you information and details on STEWART Furnaces. Or, if you prefer, a STEWART engineer will be glad to call and discuss your heat-treating problems with you.

STEWART INDUSTRIAL FURNACE DIVISION OF CHICAGO FLEXIBLE SHAFT COMPANY

Main Office: 5600 W. Roosevelt Road, Chicago 50, Ill.—*Canada Factory:* (FLEXIBLE SHAFT CO., LTD.) 321 Weston Rd., So., Toronto

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 2½¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb. to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15c. per lb higher.

Basing Points	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio	Gulf Ports, Cars	10 Pacific Ports, Cars	DELIVERED TO Detroit	New York	Philadelphia
INGOTS															
Carbon, rerolling	($31.00 f.o.b. mill)														
Carbon, forging	$36	$36	$36	$36	$36	$36	$36								
Alloy	$45	$45				$45	(Bethlehem, Massillon, Canton, Coatesville—$45)								
BILLETS, BLOOMS, SLABS															
Carbon, rerolling	$38	$38	$38	$38	$38	$38	$38	$38	(Provo—$47.20, Duluth—$38[14])			$48[14]	$38		
Carbon, forging	$42	$42	$42	$42	$42	$42	$42		(Provo—$53.20, Duluth—$44[14])			$54[14]	$44		
Alloy	$54	$54				$54		(Bethlehem, Massillon, Canton—$54)					$56		
SHEET BARS	$36	$36		$36		$36	$36	$36	(Canton—$36)						
PIPE SKELP	1.90¢	1.90¢					1.90¢	1.90¢	(Coatesville—1.90¢)						
WIRE RODS[15]															
No. 5 to 9/32 in.	2.15¢	2.15¢		2.15¢	2.15¢	(Worcester—2.25¢)					2.40¢	2.65¢			
SHEETS															
Hot-rolled	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.20¢	2.30¢	2.20¢		2.75¢	2.30¢	2.44¢	2.37¢
Cold-rolled[1]	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.15¢	3.39¢	3.37¢
Galvanized (24 gage)	3.70¢	3.70¢	3.70¢		3.70¢	3.70¢	3.70¢	3.70¢	3.80¢	3.70¢		4.25¢		3.94¢	3.87¢
Enameling (20 gage)	3.45¢	3.45¢	3.45¢	3.45¢			3.45¢		3.55¢	3.45¢		4.10¢	3.55¢	3.81¢	3.77¢
Long ternes[2]	3.80¢	3.80¢	3.80¢									4.55¢		4.16¢	4.12¢
STRIP															
Hot-rolled[3]	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.20¢	2.46¢	
Cold-rolled[4]	2.80¢	2.90¢		2.80¢			2.80¢	(Worcester—3.00¢)					2.90¢	3.16¢	
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢							2.56¢	
Commodity cold-rolled	2.95¢	3.05¢		2.95¢			2.95¢	(Worcester—3.35¢)					3.05¢	3.31¢	
TINPLATE															
Standard cokes, base box	$5.00	$5.00	$5.00						$5.10					$5.36	$5.32
Electro, box 0.25 lb	$4.35	$4.35	$4.35						$4.60						
Electro, box 0.50 lb	$4.50	$4.50	$4.50						$4.60						
Electro, box 0.75 lb	$4.65		$4.65						$4.75						
BLACKPLATE															
29 gage[5]	3.05¢	3.05¢	3.05¢						3.15¢			4.05¢[11]			3.37¢
TERNES, MFG.															
Special coated, base box	$4.30	$4.30	$4.30						$4.40						
BARS															
Carbon steel	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢	2.25	(Duluth—2.35¢, Provo, Utah 2.95¢)			2.60¢	2.90¢	2.35¢	2.56¢	2.57¢
Rail steel[6]	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢					2.60¢	2.90¢			
Reinforcing (billet)[7]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢	2.25¢	2.39¢	
Reinforcing (rail)[7]	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢				2.50¢	2.55¢	2.25¢		2.47¢
Cold-finished[8]	2.75¢	2.75¢	2.75¢	2.75¢		2.75¢		(Detroit—2.80¢)			(Toledo—2.90¢)			3.09¢	3.07¢
Alloy, hot-rolled	2.70¢	2.70¢				2.70¢	2.70	(Bethlehem, Massillon, Canton—2.70¢)					2.80¢		
Alloy, cold-drawn	3.35¢	3.35¢	3.35¢	3.35¢		3.35¢							3.45¢		
PLATES								(Coatesville and Claymont—2.25¢, Provo, Utah 2.95¢)							
Carbon steel[13]	2.25¢	2.25¢	2.25¢	2.25¢	2.25¢		2.25¢	2.25¢			2.60¢	2.80¢	2.47¢	2.44¢	2.30¢
Floor plates	3.50¢	3.50¢									3.85¢	4.15¢		3.86¢	3.82¢
Alloy	3.50¢	3.50¢			(Coatesville—3.50¢)						3.95¢	4.15¢		3.70¢	3.59¢
SHAPES															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	(Bethlehem—2.10¢)				2.45¢	2.75¢		2.27¢	2.215¢
SPRING STEEL, C-R															
0.26 to 0.50 carbon	2.80¢			2.80¢			(Worcester—3.00¢)								
0.51 to 0.75 carbon	4.30¢			4.30¢			(Worcester—4.50¢)								
0.76 to 1.00 carbon	6.15¢			6.15¢			(Worcester—6.35¢)								
1.01 to 1.25 carbon	8.35¢			8.35¢			(Worcester—8.55¢)								
WIRE[9]															
Bright[12]	2.75¢	2.75¢		2.75¢	2.75¢		(Worcester—2.85¢)		(Duluth—2.80¢)			3.25¢			3.07¢
Galvanized	Add proper size extra and galvanizing extra to Bright Wire base														
Spring (high carbon)	3.35¢	3.35¢		3.35¢			(Worcester—3.45¢)					3.85¢			3.67¢
PILING															
Steel sheet	2.40¢	2.40¢				2.40¢						2.95¢			2.72¢

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

BASING POINT	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt	21.25	20.40	15.725	16.15	19.125	23.375
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	21.25	20.40	15.725	16.15	19.125	23.375
Billets, P'gh, Chi, Canton, Newark, N. J., Watervliet, Syracuse, Balt	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Newark, N. J., Ft. Wayne, Titusville	21.25	20.40	15.725	16.15	19.125	23.375
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	25.00	24.00	18.50	19.00	22.50	27.50
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	25.00	24.00	18.50	19.00	22.50	27.50
Plates, P'gh, Middletown, Canton	29.00	27.00	21.50	22.00	26.50	30.50
Shapes, structural, P'gh, Chi	25.00	24.00	18.50	19.00	22.50	27.50
Sheets, P'gh, Chi, Middletown, Canton, Balt	36.00	34.00	29.50	29.00	32.50	36.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	23.50	21.50	17.00	17.50	24.00	35.00
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	30.00	28.00	22.00	22.50	32.00	52.00
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila	25.00	24.00	18.50	19.00	22.50	27.50
Wire flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	30.00	28.00	22.00	22.50	32.00	52.00
Rod h-r, Newark, N. J. Syracuse	25.00	24.00	18.50	19.00	22.50	27.50
Tubing, seamless, P'gh Chi, Canton, (4 in. to 8 in.)	66.63	66.63	....	63.30	....	....

SHELL STEEL

	per gross ton
3 in. to 12 in.	$52.00
12 in. to 18 in.	54.00
18 in. and over	56.00

Basic openhearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.

Prices delivered Detroit are $2.00 higher; East Michigan, $3 higher.

Price Exceptions: Follansbee Steel Corp. permitted to sell at $13.00 per gross ton, f.o.b. Toronto, Ohio, above base price of $52.00.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting, or quantity.

ELECTRICAL SHEETS

(Base, f.o.b. Pittsburgh)

	per lb
Field grade	3.30¢
Armature	3.65¢
Electrical	4.15¢
Motor	5.05¢
Dynamo	5.75¢
Transformer 72	6.25¢
Transformer 65	7.25¢
Transformer 58	7.75¢
Transformer 52	8.55¢

F.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb
No. 1 O.H., gross ton $43.00
Angle splice bars, 100 lb..... 2.70

(F.o.b. basing points)	per gross ton
Light rails (from billets)	$45.00
Light rails (from rail steel)	44.00
	base per lb
Cut spikes	3.25¢
Screw spikes	5.40¢
Tie plate, steel	2.30¢
Tie plates, Pacific Coast	2.45¢
Track bolts	4.75¢
Track bolts, heat treated, to railroads	5.00¢
Track bolts, jobbers discount	63-5

Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk)

*(*Also Canton, O.)*	base per lb
High speed	67¢
Straight molybdenum	54¢
Tungsten-molybdenum	57½¢
High-carbon-chromium*	43¢
Oil hardening*	24¢
Special carbon*	22¢
Extra carbon*	18¢
Regular carbon*	14¢

Warehouse prices east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless-clad		
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Pa.	18.00*	19.00
Nickel-clad		
10 pct, f.o.b. Coatesville, Pa.	18.00	....
Inconel-clad		
10 pct, f.o.b. Coatesville	25.00	....
Monel-clad		
10 pct, f.o.b. Coatesville	24.00	....
Aluminized steel		
Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

*Includes annealing and pickling.

WIRE PRODUCTS

To the trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points Named	Pacific Coast Basing Points†
	base per keg	
Standard wire nails	$2.90	$3.40
Coated nails	2.90	3.40
Cut nails, carloads	3.85	....
	base per 100 lb	
Annealed fence wire	$3.20	$3.70
Annealed galv. fence wire	3.55	4.05
	base column	
Woven wire fence*	67	85
Fence posts, carloads	69	86
Single loop bale ties	66	91
Galvanized barbed wire**	72	93
Twisted barbless wire	72	....

*15½ gage and heavier. **On 80-rod spools in carload quantities.

†Prices subject to switching or transportation charges.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$6.00	$12.00
15-lb coating I.C.	7.00	14.00
20-lb coating I.C.	7.50	15.00

ALLOY EXTRAS

Alloy Steel	Basic Openhearth		Electric Furnace	
	Bars and Bar-strip	Billets, Blooms, and Slabs	Bars and Bar-strip	Billets, Blooms, and Slabs
NE 8600	0.85¢	$13.00	$1.15	$23.00
NE 8700	0.70	14.00	1.20	24.00
NE 9400	0.75	15.00	1.25	25.00
NE 9700	0.65	13.00	1.15	23.00
NE 9800	1.30	26.00	1.80	36.00
NE 9900	1.20	24.00	1.55	31.00

The extras shown are in addition to the base price of $2.70 per 100 lb on finished products and $54 per gross ton on semifinished steel, major basing points, as shown in table, opposite page, and are in cents per pound when applicable to bars and bar-strip and in dollars per gross ton when applicable to billets, blooms and slabs. When acid openhearth is specified and acceptable, add to basic openhearth alloy differential 0.25¢ per lb for bars and bar-strip and $5 per gross ton for billets, blooms and slabs.

WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills

(F.o.b. Pittsburgh only on wrought pipe) base price—$200.00 per net ton

Steel (buttweld)

	Black	Galv.
⅛-in.	63½	51
¼-in.	66½	55
⅜-in.	68½	57½

Wrought Iron (buttweld)

⅛-in.	24	3½
¼-in.	30	10
⅜-in. and 1¼-in.	34	16
1½-in.	38	18½
2-in.	37½	18

Steel (lapweld)

2-in.	61	49½
2½-in. and 3-in.	64	52½
3½-in. to 6-in.	66	54½

Wrought Iron (lapweld)

2-in.	30½	12
2½-in. to 3½-in.	31½	14½
4-in.	33½	18
4½-in. to 8-in.	32½	17

Steel (butt, extra strong, plain ends)

⅛-in.	61½	50½
¼-in.	65½	54½
⅜-in. to 3-in.	67	57

Wrought Iron (same as above)

⅛-in.	25	6
¼-in.	31	12
⅜-in. to 2-in.	38	19½

Steel (lap, extra strong, plain ends)

2-in.	59	48½
2½-in. and 3-in.	62	52½
3½-in. to 6-in.	66½	56

Wrought Iron (same as above)

2-in.	33½	15½
2½-in. to 4-in.	39	22½
4½-in. to 6-in.	37½	21

On buttweld and lapweld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or $4 a ton higher than Pittsburgh or Lorain on lapweld and one point lower discount, or $2 a ton higher on all buttweld.

BOILER TUBES

Seamless steel and lapweld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots.

	Seamless Cold-Drawn	Seamless Hot-Rolled	Lapweld, Hot-Rolled
2 in. O.D. 13 B.W.G.	15.03	13.04	12.38
2½ in. O.D. 13 B.W.G.	20.21	17.54	16.58
3 in. O.D. 12 B.W.G.	22.48	19.50	18.35
3½ in. O.D. 11 B.W.G.	28.37	24.62	23.15
4 in. O.D. 10 B.W.G.	35.20	30.54	28.66

(Extras for less carload quantities)

40,000 lb or ft and over	Base
30,000 lb or ft to 39,999 lb or ft	5 pct
20,000 lb or ft to 29,999 lb or ft	10 pct
10,000 lb or ft to 19,999 lb or ft	20 pct
5,000 lb or ft to 9,999 lb or ft	30 pct
2,000 lb or ft or 4,999 lb or ft	45 pct
Under 2,000 lb or ft	65 pct

CAST IRON WATER PIPE

	Per Net Ton
6-in. and larger, del'd Chicago	$54.30
6-in. and larger, del'd New York	52.20
6-in. and larger, Birmingham	46.00
6-in. and larger, f.o.b. cars, San Francisco or Los Angeles	69.40
6-in. and larger f.o.b. cars, Seattle	71.20

Class "A" and gas pipe, $3 extra; 4-in. pipe is $3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons or over, 6-in. and larger are $45 at Birmingham and $53.30 delivered Chicago, $59.40 at San Francisco and Los Angeles, and $70.20 at Seattle. Delivered prices do not reflect 3 pct tax on freight rates.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

	Percent Off List
½ in. & smaller x 6 in. & shorter	65½
9/16 & ⅝ in. x 6 in. & shorter	63½
¾ to 1 in. x 6 in. & shorter	61
1⅛ in. and larger, all lengths	59
All diameters over 6 in. long	59
Lag, all sizes	62
Plow bolts	65

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	62
9/16 to 1 in. inclusive	59
1⅛ to 1½ in. inclusive	57
1⅝ in. and larger	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	U.S.S.	S.A.E.
Base discount less keg lots		
7/16 in. and smaller	..	64
½ in. and smaller	62	..
⅝ in. through 1 in.	..	60
9/16 in. through 1 in.	59	..
1⅛ in. through 1½ in.	57	58
1⅝ in. and larger	56	..

In full keg lots, 10 pct additional discount.

Stove Bolts	*Consumer*
Packages, nuts loose	71 and 10
In packages	71
In bulk	80

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets

(½ in. and larger)

	Base per 100 Lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$3.75

Small Rivets

(7/16 in. and smaller)

	Percent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	65 and 5

Cap and Set Screws	*Consumer Percent Off List*
Upset full fin, hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.	64
Upset set screws, cup and oval points	71
Milled studs	46
Flat head cap screws, listed sizes	26
Fillister head cap, listed sizes	51

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Maximum price f.o.b. consumer's plant, $30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

Exception

When the WPB Steel Div. certifies in writing the consumers need for one of the higher grades of metallurgical fluorspar specified in the table below the price shall be taken from the table plus items (1 and 2) from paragraph above.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

METAL POWDERS

Prices are based on current market prices of ingots plus a fixed figure. F.o.b. shipping point, cents per lb, ton lots.

Copper, electrolytic, 150 and 200 mesh	21½¢ to 23½¢
Copper, reduced, 150 and 200 mesh	20½¢ to 25½¢
Iron, commercial, 100 and 200 mesh 96 + % Fe	12½¢ to 15¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots	4¢
Iron, hydrogen reduced, 300 mesh and finer, 98½ + % Fe, drum lots	63¢
Iron, electrolytic, unannealed, 200 mesh and coarser, 99 + % Fe	30 to 32¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe	42¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe	90¢
Aluminum, 100 and 200 mesh	*25¢
Antimony, 100 mesh	30¢
Cadmium, 100 mesh	$1.40
Chromium, 100 mesh and finer	$1.25
Lead, 100, 200 & 300 mesh	11½ to 15¢
Manganese	65¢
Nickel, 150 mesh	51½¢
Solder powder, 100 mesh	31½¢ plus metal
Tin, 100 mesh	53¾¢
Tungsten metal powder, 98%-99%, any quantity, per lb	$2.60
Molybdenum powder, 99%, in 200-lb kegs, f.o.b. York, Pa., per lb	$2.60
Under 100 lb	$3.00

*Freight allowed east of Mississippi.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$7.50*
Foundry, beehive (f.o.b. oven)	
Fayette Co., W. Va.	8.10
Connellsville, Pa.	9.00
Foundry, Byproduct	
Chicago, del'd	13.75
Chicago, f.o.b.	13.00
New England, del'd	14.65
Kearny, N. J., f.o.b.	13.05
Philadelphia, del'd	13.28
Buffalo, del'd	13.40
Portsmouth, Ohio, f.o.b.	11.50
Painesville, Ohio, f.o.b.	13.15
Erie, del'd	13.15
Cleveland, del'd	13.20
Cincinnati, del'd	13.25
St. Louis, del'd	14.25
Birmingham, del'd	10.90

*Hand drawn ovens using trucked coal permitted to charge $8.60 per ton plus transportation charges.

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick	*Per 1000*
Super-duty brick, St. Louis	$68.50
First quality, Pa., Md., Ky., Mo., Ill.	54.40
First quality, New Jersey	59.35
Sec. quality, Pa., Md., Ky., Mo., Ill.	49.35
Sec. quality, New Jersey	51.95
No. 1 Ohio	45.60
Ground fire clay, net ton	8.05

Silica Brick	
Pennsylvania and Birmingham	$54.40
Chicago District	62.45
Silica cement, net ton (Eastern)	9.55

Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Plymouth Meeting, Chester	$54.00

Magnesite Brick	
Standard, Balt. and Chester	$76.00
Chemically bonded, Baltimore	65.00

Grain Magnesite	
Domestic, f.o.b. Balt. and Chester in sacks (carloads)	$43.48
Domestic, f.o.b. Chewelah, Wash. in bulk	22.00
in sacks	26.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)*

	Per Gross Ton
Old range, bessemer, 51.50	$4.75
Old range, non-bessemer, 51.50	4.60
Mesaba, bessemer, 51.50	4.60
Mesaba, non-bessemer, 51.50	4.45
High phosphorus, 51.50	4.35

*Adjustments are made to indicate prices based on variance of Fe content of ores as analyzed on a dry basis by independent laboratories.

WAREHOUSE PRICES

Delivered metropolitan areas per 100 lb. These are zoned warehouse prices in conformance with latest zoning amendment to OPA Price Schedule 49.

Cities	SHEETS			STRIP		Plates ¼ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 gage)	Cold Rolled	Galvanized (24 gage)	Hot Rolled	Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled, NE 8617-20	Hot Rolled, NE 9442-45 Ann.	Cold Drawn, NE 8617-20	Cold Drawn, NE 9442-48 Ann.
**Philadelphia	$3.518	$4.872[5]	$4.768[a]	$3.922	$4.772	$3.606	$3.666	$3.922	$4.172	$5.816	$6.866	$7.072	$8.172
New York	3.59	4.613[3]	5.110	3.974[6]	4.772	3.768	3.758	3.853	4.203	5.858	6.908	7.103	8.203
Boston	3.744	4.744[9]	5.224[9]	4.106	4.715	3.912	3.912	4.044	4.244	6.012	7.062	7.194	8.394
Baltimore	3.394	4.852	4.894	3.902	4.752	3.594	3.759	3.802	4.152	....	....	....	....
Norfolk	3.771	4.965	5.371	4.165	4.865	3.971	4.002	4.065	4.265	....	....	....	....
Chicago	3.25	4.20	5.231	3.60	4.65[17]	3.55	3.55	3.50	3.85	5.60	6.65	6.65	7.90
Milwaukee	3.387	4.337[3]	5.272[4]	3.737	4.787[17]	3.687	3.687	3.637	3.987	5.837	6.887	6.887	7.987
Cleveland	3.35	4.40	4.877[4]	3.60	4.45	3.40	3.588	3.35	3.85	5.806	6.856	6.65	7.75
Buffalo	3.35	4.40	4.754	3.819	4.669	3.63	3.40	3.35	3.85	5.80	6.65	6.65	7.75
Detroit	3.45	4.50	5.004	3.70	4.859[17]	3.609	3.661	3.45	3.90	5.93	6.98	6.959	8.059
Cincinnati	3.425	4.475[3]	4.825[5]	3.875	4.711	3.661	3.691	3.611	4.111	5.95	7.00	7.011	8.261
St. Louis	3.397	4.347[3]	5.172[4]	3.747	4.931[17]	3.697	3.697	3.647	4.131	5.981	7.031	7.031	8.131
Pittsburgh	3.35	4.40	4.75	3.60	4.45	3.40	3.40	3.35	3.85	5.60	6.65	6.65	7.90
St. Paul	3.50	4.46	5.257[4]	3.86	5.102[17]	3.811[3]	3.811[3]	3.763[3]	3.461	5.94	5.99	7.361	8.461
Omaha	3.865	5.443	5.608[4]	4.215	....	4.165	4.165	4.115	4.543	....	....	....	....
Indianapolis	3.518	4.568	4.918	3.768	4.741	3.63	3.63	3.58	4.00	5.93	6.98	6.98	8.23
Birmingham	3.45	....	4.75	3.70	....	3.55	3.55	3.50	4.53	....	....	....	....
Memphis	3.965[7]	4.66	5.268	4.215	....	4.065	4.065	4.015	4.33	....	....	....	....
New Orleans	4.058[*]	5.079	5.358	4.308	....	4.158	4.158[*]	4.108[*]	4.729	....	....	....	....
Houston	3.763	5.573	6.313[1]	4.313	....	4.25	4.25	3.75	6.473[3]	7.223	8.323	8.323	9.373
Los Angeles	5.00	7.20[3]	6.10[4]	4.95	5.613[15]	4.95	4.65	4.40	5.683	8.204	9.404	9.304	10.454
San Francisco	4.55[14]	7.30[4]	6.35[4]	4.50[14]	7.333[17]	4.65[14]	4.35[14]	4.15[14]	5.433	8.304	9.404	9.404	10.454
Seattle	4.65[12]	7.05[4]	5.95[4]	4.25[12]	....	4.75[12]	4.45[12]	4.35[12]	5.883	....	9.404	....	....
Portland	4.65[11]	6.60[4]	5.75[4]	4.75[11]	....	4.85[11]	4.45[11]	4.45[11]	5.633	8.304	9.404	8.304	9.404
Salt Lake City	4.530[17]	....	6.171[3]	5.53[17]	....	4.98[17]	4.98[17]	4.88[17]	6.00	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1499 lb; strip, extras on all quantities; bars, 1500 lb base.

NE ALLOY BARS: 1000 to 39,999 lb.

EXCEPTIONS: (1) 150 to 499 lb. (2) 150 to 1499 lb. (3) 400 to 1499 lb. (4) 450 to 1499 lb. (5) 500 to 1499 lb. (6) 0 to 199 lb. (7) 400 to 1499 lb. (8) 1000 to 1999 lb. (9) 450 to 3749 lb. (10) 400 to 3999 lb. (11) 300 to 4999 lb. (12) 300 to 10,000 lb. (13) 400 to 14,999 lb. (14) 400 lb and over. (15) 1000 lb and over. (16) 1500 lb and over. (17) 2000 lb and over. (18) 3500 lb and over.

(*) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

*Add 0.271¢ for sizes not rolled in Birmingham.

**City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

PIG IRON PRICES

Maximum per gross ton, established by OPA Oct. 22, 1945. Prices do not reflect 3 pct tax on freight.

BASING POINT PRICES

Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	$26.25	$26.75	$27.25	$27.75	.....
Birdsboro	26.25	26.75	27.25	27.75	$31.25
Birmingham	20.75	22.13	.....	29.75	.....
Buffalo	24.75	25.75	26.25	29.75	31.25
Chicago	25.25	25.75	25.75	29.25	.....
Cleveland	25.25	25.75	25.75	29.25	.....
Detroit	25.25	25.75	25.75	29.25	.....
Duluth	25.75	26.25	26.25	29.75	.....
Erie	25.25	25.75	26.25	29.75	.....
Everett	26.25	26.75	27.25	27.75	.....
Granite City	25.25	25.75	25.75	29.25	.....
Hamilton	25.25	25.75	25.75	.....	.....
Neville Island	25.25	25.75	25.75	29.25	.....
Provo	23.25	23.75	.....	.....	.....
Sharpsville [1]	25.25	25.75	25.75	29.25	.....
Sparrows Point	26.25	26.75	.....	.....	.....
Steelton	26.25	.....	.....	.....	31.25
Swedeland	26.25	26.75	27.25	27.75	.....
Toledo	25.25	25.75	25.75	29.25	.....
Youngstown	25.25	25.75	25.75	29.25	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$ .50	$26.75	$27.25	$27.75	$28.25	.....
Boston	Birdsboro-Steelton	4.02	.....	.....	.....	.....	$35.27
Brooklyn	Bethlehem	2.50	28.75	29.25	29.75	30.25	.....
Brooklyn	Birdsboro	2.92	.....	.....	.....	.....	34.17
Canton	Cle, Yngstn, Sharpsvl	1.39	28.64	27.14	27.14	27.64	.....
Canton	Buffalo	3.19	.....	.....	.....	.....	34.44
Cincinnati	Birmingham	4.06	24.81	26.19	.....	.....	.....
Cincinnati	Hamilton	1.11	.....	.....	26.36	.....	35.55
Cincinnati	Buffalo	4.40	.....	.....	.....	.....	.....
Jersey City	Bethlehem	1.53	27.78	28.28	28.78	29.28	.....
Jersey City	Birdsboro	1.94	.....	.....	.....	.....	33.19
Los Angeles	Provo	4.95	28.20	28.70	.....	.....	.....
Los Angeles	Buffalo	15.41	.....	.....	.....	.....	46.66
Mansfield	Cleveland & Toledo	1.94	27.19	27.69	27.69	28.19	.....
Mansfield	Buffalo	3.36	.....	.....	.....	.....	34.61
Philadelphia	Swedeland	.84	27.09	27.59	28.09	28.59	.....
Philadelphia	Birdsboro	1.24	.....	.....	.....	.....	32.49
San Francisco	Provo	4.95	28.20	28.70	.....	.....	.....
San Francisco	Buffalo	15.41	.....	.....	.....	.....	46.66
Seattle	Provo	4.95	28.20	28.70	.....	.....	.....
Seattle	Buffalo	15.41	.....	.....	.....	.....	46.66
St. Louis	Granite City	.50	25.75	25.25	26.25	26.75	.....
St. Louis	Buffalo	7.07	.....	.....	.....	.....	39.32

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, $33.00 and $34.00, respectively. Newberry Brand of Lake Superior charcoal iron $39.00 per g.t., f.o.b. furnace, by order L 89 to RPS 10. Apr. 11, 1945, retroactive to Mar. 7, 1945. Delivered to Chicago, $42.34. High phosphorus iron sells at Lyles, Tenn., at $28.50.

Basing point prices are subject to switching charges; Silicon differentials (not to exceed 50¢ a ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); Phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; Manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. Effective Mar. 3, 1943, $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron and bessemer ferrosilicon up to and including 14.00 pct silicon covered by RPS 10 as amended Feb. 14, 1945. Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$31.25; f.o.b. Buffalo—$32.50. Add $1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for prices of comparable analysis.

Ferromanganese

78-82% Mn, maximum contract base price per gross ton, lump size, f.o.b. car at Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.

Carload lots (bulk)	$135.00
Less ton lots (packed)	148.50
F.o.b. Pittsburgh	139.50

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Ferromanganese Briquets

Contract prices per pound of briquet, f.o.b. shipping point, freight allowed to destination. Approx. 66% contained Mn. Add 0.25¢ for spot sales.

	Eastern	Central	Western
Carload, bulk	6.05¢	6.30¢	6.60¢
Ton lots	6.65¢	7.55¢	8.55¢
Less ton lots	6.80¢	7.80¢	8.80¢

Manganese Metal

Contract basis, lump size, per pound of metal, f.o.b. shipping point with freight allowed. Spot sales add 2¢ per lb.

96-98% Mn, .2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	30¢
L.c.l. lots	32¢

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	34¢
Ton lots	36¢
Less ton lots	38¢

Spiegeleisen

Maximum base contract prices per gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$35.00	$36.00
Less ton	47.50	48.50
F.o.b. Pittsburgh, Chicago	40.00	

Low-Carbon Ferromanganese

Contract prices per pound of manganese contained, lump size, f.o.b. shipping point, freight allowed to destination, eastern zone. Add 0.25¢ for spot sales.

	Carloads, Ton Bulk	Lots	Less Ton
0.06% C, 0.06% P, 90% Mn	23.00¢	23.40¢	23.65¢
0.10% max. C, 1% or 2% max. Si	23.00¢	23.40¢	23.65¢
0.15% max. C, 1% or 2% max. Si	23.00¢	23.40¢	23.65¢
0.30% max. C, 1% or 2% max. Si	21.00¢	21.40¢	21.65¢
0.50% max. C, 1% or 2% max. Si	20.00¢	20.40¢	20.65¢
0.75% max. C, 7.00% max. Si	16.00¢	16.40¢	16.65¢

Electric Ferrosilicon

OPA maximum base price cents per pound contained Si, lump size in carloads, f.o.b. shipping point with freight allowed.

	Eastern	Central	Western
50% Si	6.65¢	7.10¢	7.25¢
75% Si	8.05¢	8.20¢	8.75¢
80-90% Si	8.90¢	9.05¢	9.55¢
90-95% Si	11.05¢	11.20¢	11.65¢

Silvery Iron

Si 14.01 to 14.50%, $45.50 per G. T. f.o.b. Jackson, Ohio; Keokuk, Iowa, $48.75; Niagara Falls, $46.75. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%. Covered by MPR 405.

Silicon Metal

OPA maximum base price per pound of contained Si, lump size, f.o.b. shipping point with freight allowed to destination, for l.c.l. above 2000 lb, packed. Add 0.25¢ for spot sales.

	Eastern	Central	Western
96% Si, 2% Fe	13.10¢	13.55¢	16.50¢
97% Si, 1% Fe	13.45¢	13.90¢	16.80¢

Ferrosilicon Briquets

OPA maximum base price per pound of briquet, bulk, f.o.b. shipping point with freight allowed to destination. Approximately 40% Si. Add 25¢ for spot sales.

	Eastern	Central	Western
Carload, bulk	3.35¢	3.50¢	3.65¢
2000 lb-carload	3.80¢	4.20¢	4.25¢

Silicomanganese

Contract basis lump size, per pound of metal, f.o.b. shipping point with freight allowed. Add 25¢ for spot sales. 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	6.05¢
2000 lb to carload	6.70¢
Briquet, contract basis, carlots, bulk freight allowed, per lb	5.80¢
2000 lb to carload	6.30¢
Less ton lots	6.55¢

Ferrochrome

(65-72% *Cr, 2% max. Si*)

OPA maximum base contract prices per pound of contained Cr, lump size in carload lots, f.o.b. shipping point, freight allowed to destination. Add 0.25¢ per lb contained Cr for spot sales.

	Eastern	Central	Western
0.06% C	23.00¢	23.40¢	24.00¢
0.10% C	22.50¢	22.90¢	23.50¢
0.15% C	22.00¢	22.40¢	23.00¢
0.20% C	21.50¢	21.90¢	22.50¢
0.50% C	21.00¢	21.40¢	22.00¢
1.00% C	20.50¢	20.90¢	21.50¢
2.00% C	19.50¢	19.90¢	21.00¢
66-71% Cr, 4-10% C	13.00¢	13.40¢	14.00¢
62-66% Cr, 5-7% C	13.50¢	13.90¢	14.50¢

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66-71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

Ferrochrome Briquets

Contract prices per pound of briquet, f.o.b. shipping point, freight allowed to destination. Approx. 60% contained chromium. Add 0.25¢ for spot sales.

	Eastern	Central	Western
Carload, bulk	8.25¢	8.55¢	8.95¢
Ton lots	8.75¢	9.25¢	10.75¢
Less ton lots	9.00¢	9.50¢	11.00¢

Calcium—Manganese—Silicon

Contract prices per pound of alloy, lump size, f.o.b. shipping point, freight allowed to destination.

16-20% Ca, 14-18% Mn, 53-59% Si. Add 0.25¢ for spot sales.

	Eastern	Central	Western
Carloads	15.50¢	16.00¢	18.05¢
Ton lots	16.50¢	17.35¢	19.10¢
Less ton lots	17.00¢	17.35¢	19.60¢

Calcium Metal

Eastern zone contract prices per pound of metal, f.o.b. shipping point, freight allowed to destination. Add 5¢ for spot sales. Add 0.9¢ for central zone; 0.49¢ for western zone.

	Cast	Turnings	Distilled
Ton lots	$1.80	$2.30	$5.00
Less ton lots	2.30	2.80	5.75

Chromium—Copper

Contract price per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si. Add 2¢ for spot sales.

Shot or ingot	45¢

Ferroboron

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed to destination. Add 5¢ for spot sales. 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% Max. C.

	Eastern	Central	Western
Ton lots	$1.20	$1.2075	$1.229
Less ton lots	1.30	1.3075	1.329

Manganese—Boron

Contract prices per pound of alloy, f.o.b. shipping point, freight charges allowed. Add 5¢ for spot sales.

75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.

	Eastern	Central	Western
Ton lots	$1.89	$1.903	$1.935
Less ton lots	2.01	2.023	2.055

Nickel—Boron

Spot and contract prices per pound of alloy, f.o.b. shipping point, freight allowed to destination.

15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

	Eastern	Central	Western
11,200 lb or more	$1.90	$1.9125	$1.9445
Ton lots	2.00	2.09125	2.0445
Less ton lots	2.10	2.1125	2.1445

Other Ferroalloys

Ferrotungsten, standard grade lump or ¼X down, packed f.o.b. plant at Niagara Falls, New York, Washington, Pa., York, Pa., per pound contained tungsten, 10,000 lb or more	$1.90
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, usual freight allowances, per pound contained V.	
Openhearth	$2.70
Crucible	$2.80
Primos	$2.90
Cobalt, 97% min., keg packed, contract basis, f.o.b. producers plant, usual freight allowances, per pound of cobalt metal	$1.50
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, any quantity, per pound conatined V_2O_5. Spot sales add 5¢ per lb contained V_2O_5	$1.10
Silcaz No. 3, contract basis, f.o.b. plant with usual freight allowances, per pound of alloy.	
carload lots	25¢
2000 lb to carload	26¢
Silvaz No. 3, contract basis, f.o.b. plant with freight allowances, per pound of alloy.	
Carload lots	58¢
2000 lb to carload	59¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed 50 lb and over, max. based on rate to St. Louis	
No. 1	87.5¢
No. 6	60¢
No. 79	45¢
Bortram, f.o.b. Niagara Falls	
Ton lots, per lb	45¢
Less ton lots, per lb	50¢
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant with freight allowances, per pound contained Cb.	
2000-lb lots	$2.25
Under 2000-lb lots	$2.30
Ferrotitanium, 40-45%, 0.10%C. max. f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Less ton lots	$1.25
Ferrotitanium, 20-25%, 0.10%C. max., ton lots, per pound contained titanium	$1.35
Less ton lots	$1.40
High-carbon ferrotitanium, 15-20%, 6-8% carbon, contract basis, f.o.b. Niagara Falls, N. Y. freight allowed east of Mississippi, north of Baltimore and St. Louis, per carload	$142.50
Ferrophosphorus, 18% electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with $3 unitage freight equalled with Rockdale, Tenn., per gross ton	$58.50
Ferrophosphorus, electrolytic 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., $3 unitage freight equalized with Nashville, per gross ton	$75.00
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., any quantity, per pound contained Mo	95¢
Calcium molybdate, 40-45%, f.o.b. Langeloth and Washington, Pa., any quantity, per pound contained Mo	80¢
Molybdenum oxide briquets, 48-52% Mo f.o.b. Langeloth, Pa., per pound contained Mo	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo	80¢
Zirconium, 35-40%, contract basis, f.o.b. producer's plant with freight allowances, per pound of alloy. Add ¼¢ for spot sales	
Carload lots	14¢
Zirconium, 12-15%, contract basis, lump f.o.b. plant usual freight allowances, per pound of alloy	
Carload, bulk	4.60¢
Alsifer (approx. 20% Al, 40% Si and 40% Fe), contract basis, f.o.b. Niagara Falls, carload, bulk	5.75¢
Ton lots	7.25¢
Simanal (approx. 20% Si, 20% Mn, 20% Al), contract basis, f.o.b. Philo, Ohio, with freight not to exceed St. Louis rate allowed, per pound.	
Car lots	8.00¢
Ton lots	8.75¢
Less ton lots	9.25¢

JET PROPULSION TURBINES by BROACHING

Step 1

WAR PRODUCTION, with its emphasis on speed and precision, proved beyond a doubt the unequalled speed and accuracy of broaching. For example, the typical wartime problem shown below was the exact shaping of slots in jet propulsion turbines. Broaching by *American* delivered the turbines much faster than would have been possible by any other method.

Likewise, in today's competitive market, broaching by *American* can turn out your products speedily, economically, and accurately. Let *American's* complete broaching service—machines, tools, and engineering—help solve your manufacturing problems. Write today for details.

An *American* HD-15-66 Horizontal Broaching Machine (below) was used to broach starting slots in jet propulsion turbine wheels. Employing a set of two broaches, two cuts were made with the first, and one cut with the second — the second broach deepening one of the slots already cut with the first broach. The result of these three cuts is illustrated by the silhouette above.

WATCH THIS PAPER for the next operation in broaching jet propulsion turbines. Step 2—Semi-Finishing—will be described in *American's* February 28th advertisement.

MEMBER BROACHING TOOL INSTITUTE

American BROACH AND MACHINE CO.

ANN ARBOR, MICHIGAN

•

BROACHING MACHINES
PRESSES
BROACHING TOOLS
SPECIAL MACHINERY

DIVISION OF SUNDSTRAND MACHINE TOOL CO.

New Baker ARTICULATED
Fork Truck cuts aisle requirements

DESIGNED PRIMARILY FOR EFFICIENT WAREHOUSE OPERATION

A basically new design* involving a new method of steering by "articulating" the frame, permits swinging the load to line it up in position without lining up the truck itself. Thus this truck requires about two feet less space for placing loads at right angles to aisles. It needs less clearance on turns, and speeds carloading or any other handling operation where loads must be lined up or positioned in congested areas.

Specific advantages of this truck are:

1. Works in narrower aisles.
2. Turns in a smaller radius.
3. Spots loads quicker and easier.
4. Control units are more accessible.
5. Simpler Steering design cuts maintenance.
6. Permits mechanization of handling where hand trucks were necessary because of space limitations.

Field tests in both warehouse and production operation have proved the many advantages of this new truck. For complete specifications request Bulletin 1330.

*Licensed under Stevenson Patent No. 2,284,237.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*
2175 West 25th Street • Cleveland, Ohio
In Canada: Railway and Power Engineering Corporation, Ltd.

Baker INDUSTRIAL TRUCKS

Steel Strike May Call For CPA Allocations

Washington

• • • **The Civilian Production Administration does not plan to reimpose steel allocations at this time, Commodore J. D. Small, Civilian Production Administrator told THE IRON AGE.**

However, should the present supply situation become worse in the event that the steel strike set for Jan. 14 materializes, it may be necessary for CPA to invoke allocations to spread available supplies among reconversion manufacturers. Commodore Small reiterated that CPA would be very reluctant to assume any allocation job at this time.

The new priorities regulation No. 33 which is designed to afford priorities assistance for moderate-cost housing was announced by CPA. The regulation which covers 10 types of building materials including cast iron soil pipe and fittings will be administered by the Federal Housing Administration under delegation of authority from CPA. "HH" ratings, as they are called, will be issued to assure construction of housing units costing less than $10,000 or renting for less than $80 monthly. These new ratings are extensible and are on a par with CC ratings.

Establishes Sharing Plan

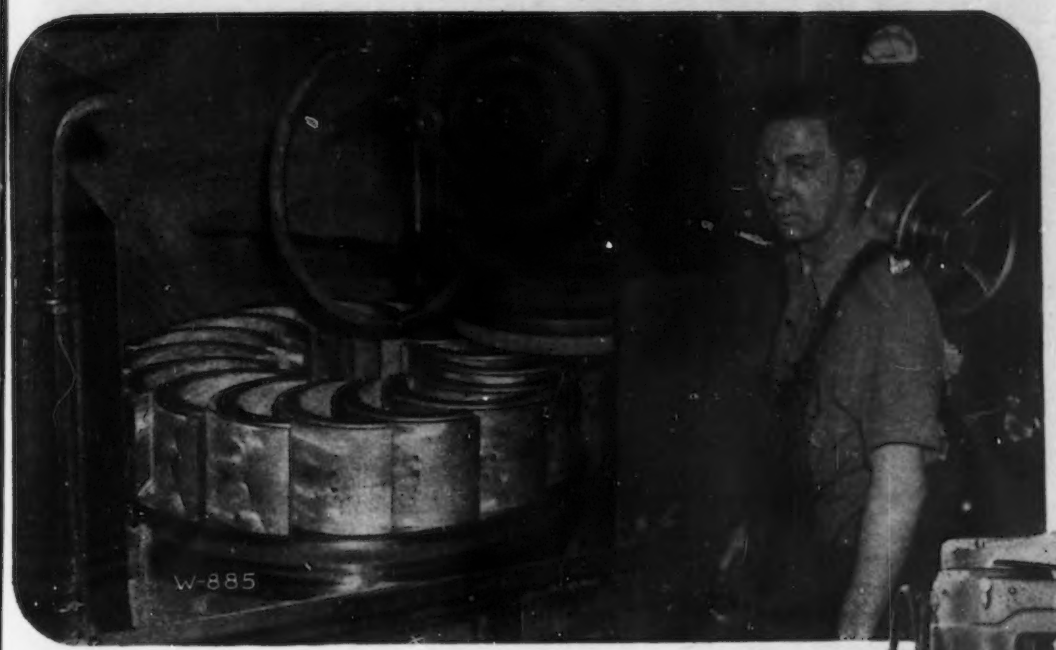
Detroit

• • • **Hydraulic Machinery, Inc., has established a stock bonus and profit-sharing plan for its employees. All workers who were with the company for at least three months before the execution of the trust agreement last June 29, and all employees who have since acquired three months of continued service, are eligible.**

The company will pay out of profits a sum not to exceed 15 pct of total compensation of all employees in the plant, providing this does not reduce net income of the company below $30,000 per yr. This will be done for ten years.

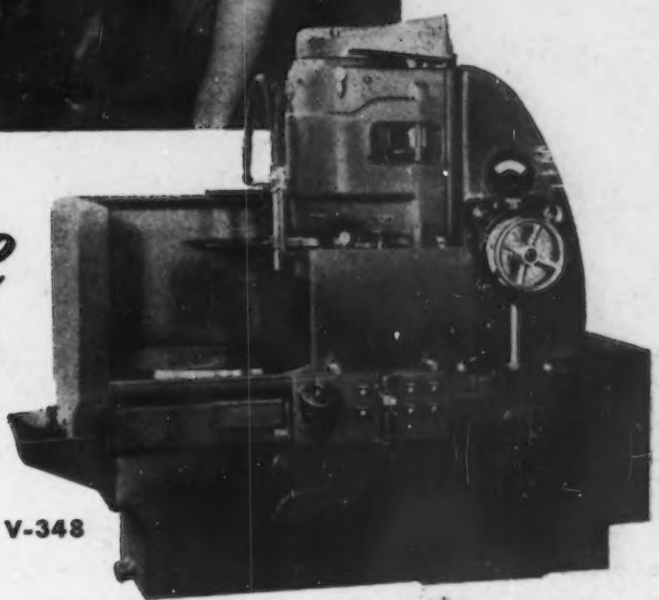
At the termination of that period the employee will receive the total of all credits standing to his account. In the case of death, a beneficiary receives this sum at the termination point of the plan, if not before; disability brings the same result.

If the worker leaves the company during the 10-yr period, he receives a portion of his credits based upon the length of service.



Send for your free copy of "Work Done on the Blanchard", third edition. This new book shows over 100 actual jobs where the Blanchard Principle is earning profits for Blanchard owners.

"Put it on the Blanchard"



V-348

These turbine bearings measuring 12⅞" O. D., 9⅛" I. D. and 7⅝" long of steel and bearing babbit are ground on a No. 18 Blanchard Surface Grinder equipped with a 36" chuck.

5/16" of stock is removed from each bearing grinding to limits of ±.005", 32 pieces are ground per hour on one end. (16 pieces per load on the chuck.)

This is an excellent demonstration of how you can get greater production from the Blanchard than by any other method for machining work of this character. Other methods would involve special holding devices or fixtures — the Blanchard method is 3 to 4 times faster.

Get These Advantages

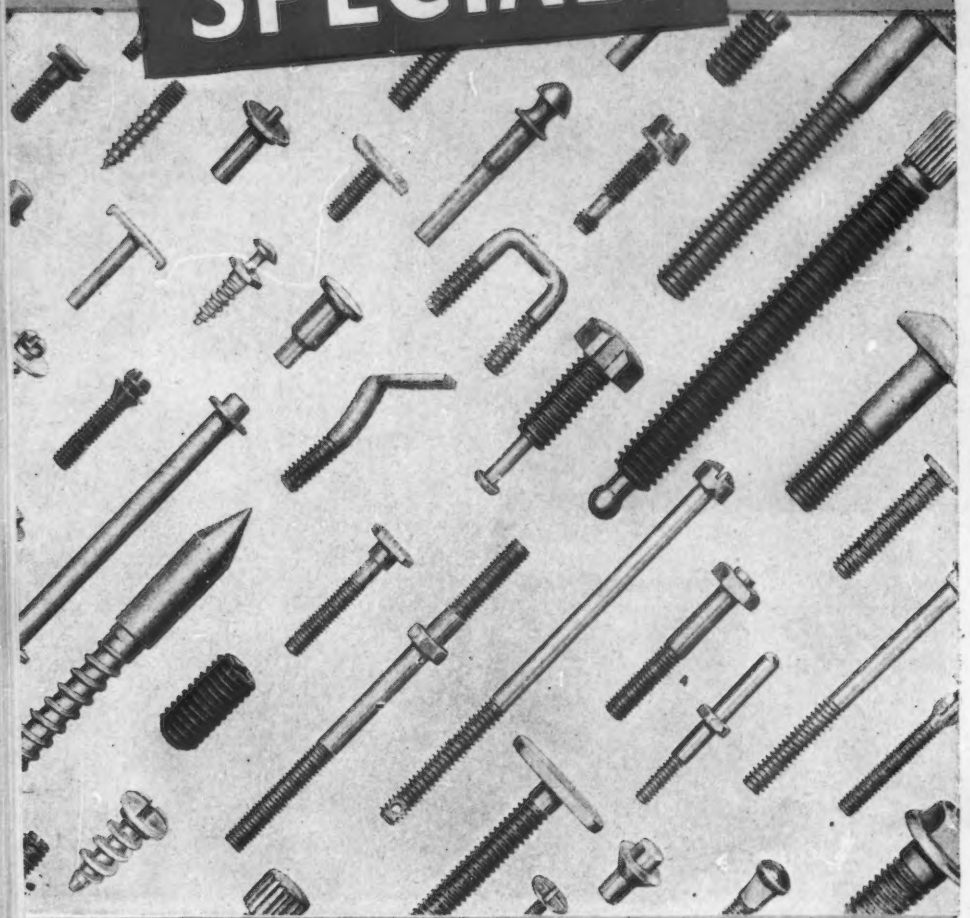
- **Production ✓**
- **Adaptability ✓**
- **Fixture Saving ✓**
- **Operation Saving**
- **Material Saving**
- **Fine Finish**
- **Flatness**
- **Close Limits**

BLANCHARD

The BLANCHARD MACHINE COMPANY

64 STATE STREET, CAMBRIDGE 39, MASS., U. S. A.

HOLTITE SPECIALS



These Special Fastenings and Parts were selected from thousands of items we are continually producing to convey an idea of the extensive range of our service.

If you are now using standard fastenings that are not fully satisfactory for the purpose, send us full particulars and we will gladly recommend Specials designed specifically for your particular application. Specially designed fastenings often eliminate extra parts and assembling operations while strengthening the assembly.

Special equipment, representing the latest improvements in high speed, precision machinery, together with experienced engineering talent assure the most precise, efficient Specials that can be produced. Send samples, specifications or blue prints for quotation.

50% SAVINGS

HOLTITE
—PHILLIPS—
Recessed Head Fastenings

As bit cannot slip from recessed head, spiral and power drivers can be safely used, even on finished parts, to cut your fastening time in half!

For regular fastenings select your requirements from the complete line of HOLTITE standard screws, bolts, nuts and allied fastenings, furnished with slotted head or HOLTITE-Phillips Recessed Heads.

CONTINENTAL SCREW CO.

NEW BEDFORD, MASS., U.S.A.

NEWS OF INDUSTRY

Sees Metals Important In Forward Move Of Technological Work

Chicago

• • • **A bridge of metals** reaching toward new horizons in technology was forecast here recently by Cyril S. Smith, professor of metallurgy and director of the newly established Institute of Metals at the University of Chicago.

"We can look forward to a period in which the theory of the nature, structure and behavior of metals is so well understood that materials can be selected with certainty for new applications and the period of development greatly reduced," Prof. Smith said.

"Simultaneously, there are attractive possibilities for getting better service from present materials as their nature and treatment are understood and of stopping the wastage of our limited natural resources by proper utilization of alloying elements.

"The field of metals is ripe for great advances in theory, for there is a wealth of experimental material to be explained. There are many new horizons that can be reached only over a bridge of metals.

"The field of metals, however, is lagging today," Prof. Smith declared. "Metallurgists kept ahead of the engineer in properties of metal and methods of quantity production in the 19th century, but they are lagging in the 20th."

Aircraft designers want materials of much greater strength-weight ratio, and designs for prime movers, whether powered by combustion, steam, jets or atomic disintegration, are all seriously limited by the strength of material at high temperatures, he said.

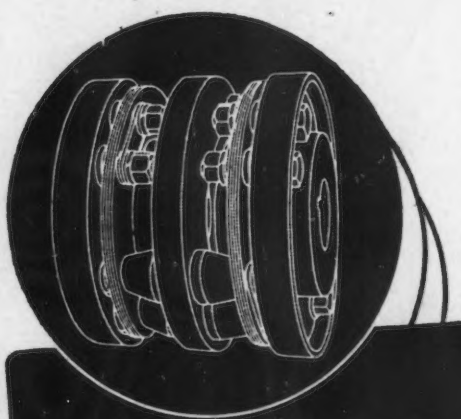
Making a plea for the support of the science of metals, of all metals, Prof. Smith contended in his paper that the sole dependence of metals research under the auspices of industry has produced an extremely warped picture with many parts lacking.

"Metallurgists, with a few notable exceptions, have studied the alloys of the industrially important metals and have aimed to promote the profitable use of these rather than to gain basic understanding. Even university research and teaching in metallurgy has been to a very large degree colored by industrial requirements, and the largest group of metallurgists

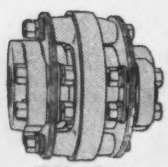
3 stories - 40,000 feet high!
BOHN
Here's an interior view of one of the three-decker stratosphere planes that one day may be making non-stop flights between Europe and America. This is only one of the amazing things the world of tomorrow holds in store for us. In many of these new products and in improvements of many products in daily use—the light alloys, magnesium and aluminum, will play an important part in effecting weight reductions, reducing operating costs. Bohn Engineers will be glad to consult with you in fitting these versatile light alloys into your production plans.
BOHN ALUMINUM AND BRASS CORPORATION
GENERAL OFFICES, LAFAYETTE BLDG. • DETROIT 26, MICHIGAN
Designers and Fabricators
ALUMINUM • MAGNESIUM • BRASS • AIRCRAFT-TYPE BEARINGS

THOMAS *Flexible* COUPLINGS

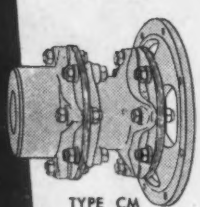
....are specified by engineers, wherever 100% Operating Efficiency is demanded



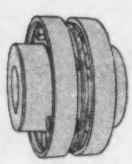
TYPE DBZ



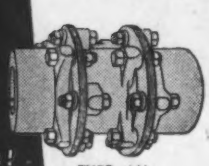
TYPE DSM



TYPE CM



TYPE ST

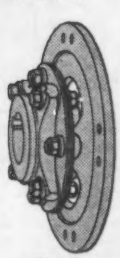


TYPE AM

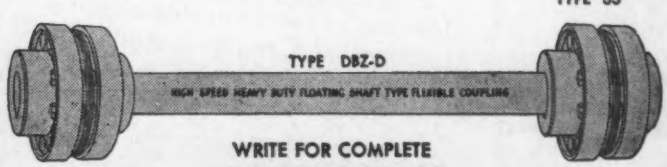
THOMAS *Flexible* **COUPLINGS** provide for Angular and Parallel Misalignment as well as Free End Float . . . *and Eliminate* BACKLASH, FRICTION, WEAR and CROSS-PULL

NO LUBRICATION IS REQUIRED!

The Thomas All-Metal Coupling does not depend on springs, gears, rubber or grids to drive. All power is transmitted by direct pull.



TYPE SS



TYPE DBZ-D

HIGH SPEED HEAVY DUTY FLOATING SHAFT TYPE FLEXIBLE COUPLING

WRITE FOR COMPLETE ENGINEERING CATALOG

THOMAS FLEXIBLE COUPLING CO.

WARREN, PENNSYLVANIA

are those employed by the various metallurgical industries with no other purpose than the expansion of markets for a given product or the forestalling of a competitor.

"The atom bomb was almost exactly what the physicists predicted in operation, power and effect, but for the metallurgists, it was quite impossible to say beforehand what kind of metal plutonium would be. Although metallic uranium had been known for 100 yr., there was also no information on its alloys.

"And what is worse," Prof. Smith stated, "there was no means whatever, short of actual trial, of determining what alloys were likely to have the particular properties required for the application of the bomb."

The newly-formed Institute of Metals at the University of Chicago is an attempt to compensate partially for the one-sidedness in metallurgical research, Prof. Smith said.

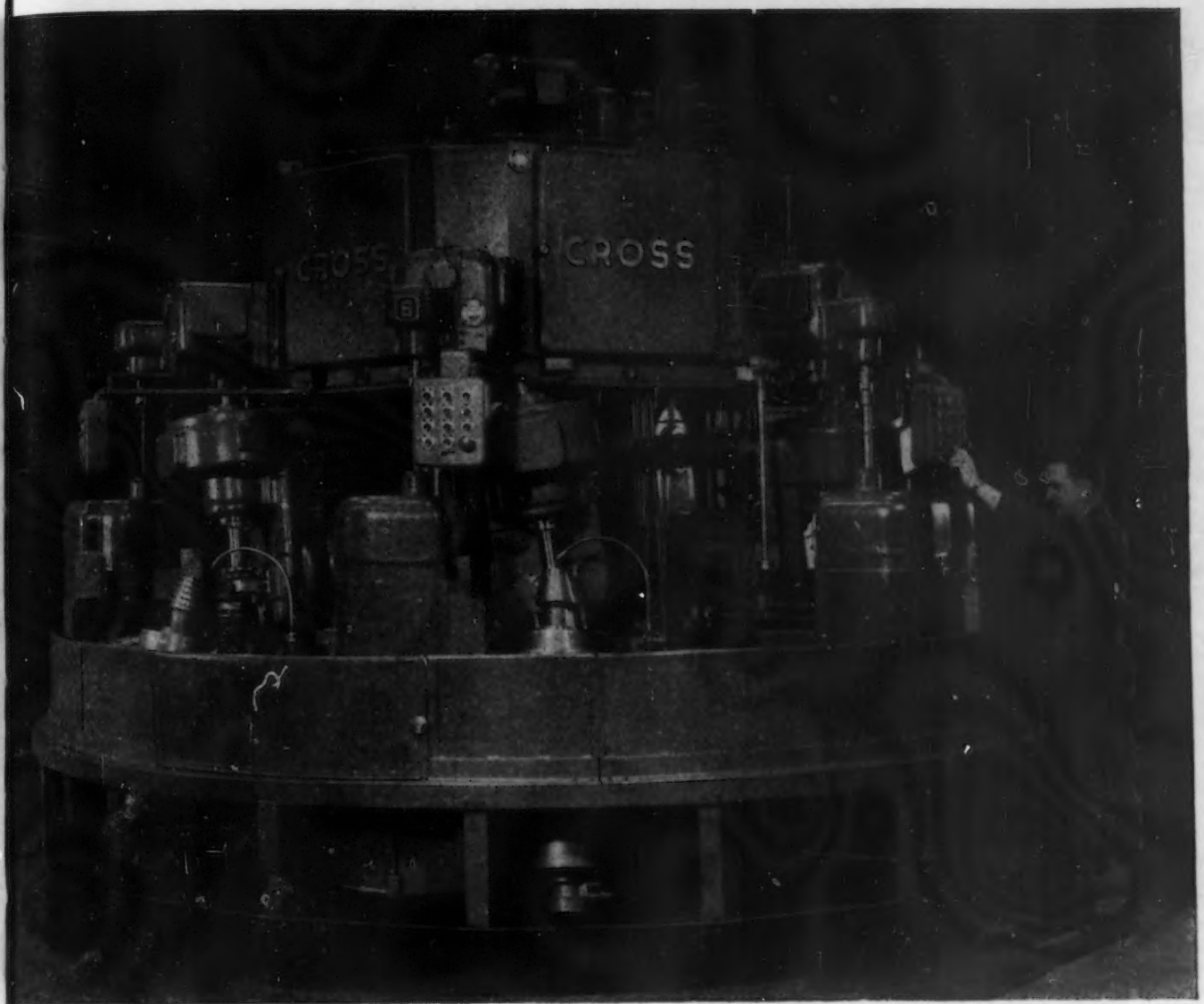
"Metallurgists in the institute laboratory, being replete with practical know-how and information in the structure and behavior of metals, and with closely maintained connections with industrial laboratories, will associate with physicists interested in the theory of the solid state and with chemists concerned with understanding the nature of reactions of metal surfaces with nonmetallic media," Prof. Smith stated.

Can Ceiling Set by OPA

Washington

• • • OPA on Dec. 13 set a new ceiling, effective Dec. 18, on "general line" cans—those made of 28 gage or lighter sheets and requiring protective packaging for shipment — formerly made of hot dip tin plate but now made of electrolytic tin plate or black plate. For cans made of electrolytic tin plate the ceiling was set at the March, 1942, price for hot dip tin plate cans minus the difference in cost, computed on a current basis, between a hot dip tin plate can and an electrolytic tin plate can. As originally written, the amended order established a similar pricing formula for cans made of black plate and this was continued without change.

Manufacturers of new types or sizes of general line cans, not offered for sale during March, 1942, OPA said, will calculate maximum prices by using the formula they used that month.



Here's how it works: The bed rotates continuously. During one revolution, each of six independent, self-contained stations mills the taper threads on one piece of work—six pieces are completed in a revolution. As each station passes the operator, he simply unloads, reloads, and starts the automatic cycle by pushing a button. Production is 40 Oil Drill Cutters per hour at 80% efficiency.

Send for the booklet that tells about other Cross case histories that increased profits by lowering costs. Write The Cross Company, Detroit 7, Michigan, Dept. 192.

S-27

SPECIAL MACHINES

for automatically performing any one or a combination of metal cutting operations
TURNING · MILLING · DRILLING · BORING · REAMING · TAPPING · GRINDING

Work Starts on Brazilian Steel Plant Foundry

Dual purpose facility to cost $1,850,000 and will be one of most unusual foundries in the Western Hemisphere

CONSTRUCTION of a foundry—one of the most unusual in the Western Hemisphere—for the large Brazilian National Steel project at Volta Redonda, Brazil, has been started.

The foundry, according to Roy I. Jones, head of the Industrial Engineering Division of Giffels & Vallet Inc., L. Rossetti, associated engineers and architects, Detroit, who designed the complete foundry project, will produce ingot molds and stools, iron grain and chilled rolls, steel rolls, miscellaneous iron, steel and nonferrous castings. The foundry which will cost approximately $1,850,000 will pioneer in many ways the reduction of hand labor and the improving of working conditions in the Brazilian foundry industry.

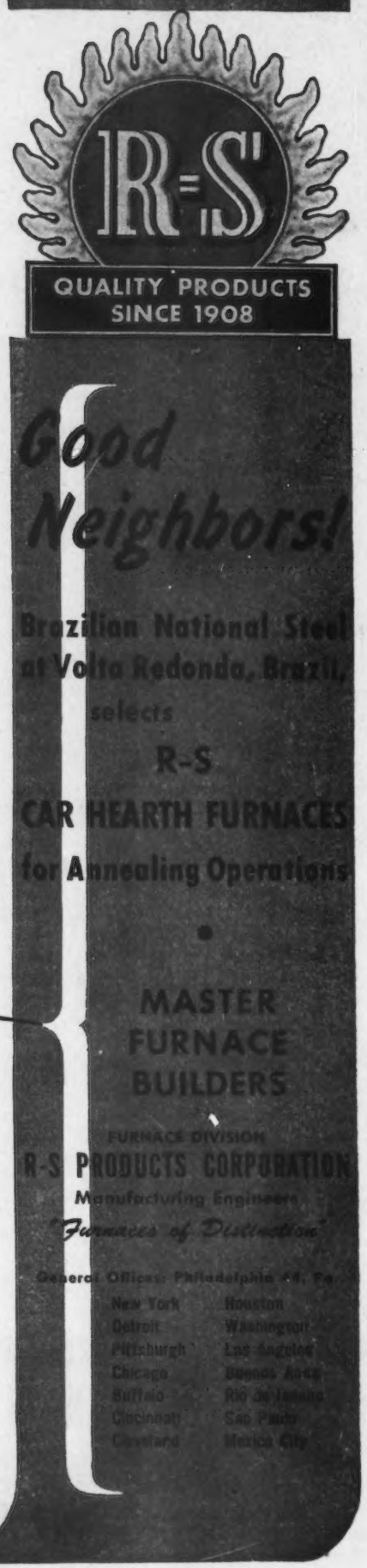
The foundry is a dual purpose facility. Half of the space is devoted to highly mechanized production systems for the regular supply of ingot molds and stools. The remaining half of the foundry is primarily for production of castings to keep the mill equipment in constant operation, and has facilities and equipment capable of producing any casting in the entire steel mill.

The foundry is designed so that ingot molds may be poured with hot blast furnace metal direct from the open-hearth mixers. Its equipment includes a cupola, air furnace, electric furnace, monophase furnace, nonferrous metal furnace, annealing furnaces, pit type ingot mold ovens, a completely mechanized sand conditioning and distribution system, casting and cleaning equipment, roll turning lathes, and ingot mold milling equipment.

The jobbing nature of this foundry's operations requires that it be, in addition to an ingot mold foundry, a steel foundry one week, an iron foundry the next, and perhaps a roll foundry the following week. This gave rise to the requirement that, in addition to the charging of the cupola, the arc furnace and air furnace would need to be charged at various times both with cold charges and with hot charges for duplexing.

The foundry has been designed for ready expansion to provide an additional 150 per cent capacity. Construction of the foundry is expected to be completed in about nine months, about the time when the main portion of the steel mill will be completed.

Reprinted from STEEL Magazine



Urges Creation Of Patent Courts For Complicated Problems

Chicago

• • • **Creation of special** patent courts to handle the increasingly complicated legal problems presented by modern technological advances was proposed recently by Casper W. Ooms, United States Commissioner of Patents, in an address before the Chicago Section of the American Chemical Society.

Important administrative reforms also were advocated by Commissioner Ooms and other participants in a panel discussion of the patent system.

"The patent litigation process is becoming increasingly difficult because of the profound character of modern science and the need for technical assistance in the determination of the technical scientific questions posed by most patent cases," Commissioner Ooms declared.

"The courts must be aided either by impartial experts of unquestioned competency or by the establishment of separate patent tribunals."

These tribunals might be composed of sitting judges who are specially fitted for this type of service, he continued, or entirely new courts composed of men chosen specifically for their qualifications in the patent field might be set up.

"The patent is only as good as it can be demonstrated to be in litigation." Commissioner Ooms stated, adding:

"While the past decade, with its reform of Federal procedure, has seen a quickening of the pace of litigation, there are still many phases of the litigation process that require improvement, particularly that relating to patent accountings."

Extensive changes also are needed in the administrative procedure of granting patents, he asserted. Although the system is fundamentally sound, he said, "it can and should be simplified to facilitate and speed up the issuance of patents so that the disclosure to the public may be expedited and the patentee may begin to employ his reward for the disclosure at the earliest possible time."

For example, the Commissioner continued, there is a definite need for simplification of the problem of searching the pertinent litierature by which the novelty of an invention is tested. This problem is shared by the Patent Office with all laboratories and industries, he pointed out, because of both

Sciaky portable spot welding units are designed with the accent on lightness – both in guns and cables.

The use of high tensile metals plus skillful design, saves weight . . . makes the gun easier and faster to handle . . . more accessible, too.

Both pneumatic and hydraulic units are available in ratings of 50, 75 and 100 KVA. Sciaky electronic control units provide electronic control of welding sequence, current interruption and welding heat. Transformers may be suspended from any type hoist for moving about. Special features include high-efficiency, light weight flexible cables, fast acting electro valve and booster, and adjustable balancing device for larger guns. A variety of standard gun types, designed for nearly every job, are available.

Hydraulic units make efficient use of water. System is automatically refilled from same line supplying cooling water in case of leakage. Rust-proof materials are used throughout.

Write for bulletin 122-A

Makers of Quality Resistance Welding Equipment.
Offices in New York, Washington, Detroit and Los Angeles.
Representatives in principal cities. Plants in London and Paris.

4913 West 67th Street, Chicago 38, Illinois

SCIAKY BROS.

HAVE YOU RECEIVED YOUR COPY OF THIS FACT-FILLED FOLDER?

KING
WELDED STEEL RINGS FLANGES
ROLLED FROM STANDARD BAR STOCK
RINGS AND FLANGES
KING FIFTH WHEEL COMPANY
SECOND STREET · PHILADELPHIA 33 · PENNSYLVANIA

King Fifth Wheel Company
2917 North Second Street
Philadelphia 33, Pa.

2

Gentlemen:

Please rush me my copy of folder on King Rings and Flanges. And with the build-up you've given it—it had better be good!

Firm Name.....

Address.....

City..... *Zone*..... *State*.....

My name and position is.....

.....

the increasing complexity of technological developments and the "almost immeasurable" growth of the literature involved.

Besides the problem of identifying the novel features of an invention proposed for patenting, he noted, there also is the task of measuring the discernible advance against the standard of invention to determine whether invention is present in the progressive step disclosed by the patent application.

"This problem we hope to meet," he said, "by the expression of a set of rules which will clarify this determination—a set of rules that we hope can be used in the Patent Office and that we hope the courts may find sufficiently useful to provide a rule of judicial decision when a patent is contested.

"There are innumerable other problems of Patent Office procedures that must have critical examination in order that no patentee will suffer either failure or discouragement because of the technical processes of Patent Office operation."

The most discussed of all patent problems is that of the so-called abuse of patents, Commissioner Ooms declared, and legislation frequently is proposed for the forfeiture of misused patents, with heavy penalties to be imposed for anti-trust schemes devised under the apparent sanction of patents.

"As long as these abuses exist, they will create a loud protest that exaggerates the extent of the abuse," he said. "Remedies must be devised to permit the patent owner the fullest exploitation of his invention and still protect the public against devices that interfere with the freest possible enterprise.

"Enlightened consideration of these problems will yield remedies that are beneficial to the patent system and need create no apprehension as to its survival."

Establishment of a single court of patent appeals was urged by Robert Gottschalk, patent counsel of the Corn Products Refining Co., another participant in the panel discussion. He also suggested an attempt to outlaw by statute "some of the wild theories on which the courts have in recent cases sometimes invalidated or refused patents."

Among the major defects of the patent system, according to Mr. Gottschalk, is the high mortality of patents litigated in the courts which he said tends to discourage invention and the necessary investment of risk

Quiet - Cool -

NEW BALLENTINE SINGLE VALUE CAPACITOR MOTOR

This miniature powerhouse heads the parade of Ballentine Motors now rolling off the production lines and available for prompt delivery.

Like all QUIET Ballentine Motors, the Single Value Capacitor Motor is the result of expert craftsmanship at its best—*precision dynamic balance*—strict adherence to close tolerances. It is especially suitable for built-in applications, as it has no switches—no brushes. Ideal for projectors, fans, and similar applications where high heat losses are not desirable.

Other QUIET Ballentine Motors from 1/1000 to 1/8 H.P. will soon be available.

SPECIFICATIONS

Single value capacitor motor. Diameter 3½", Length 3½". Double or single shaft extension. 2 pole—1/20 h.p. 3400 RPM, 4 pole—1/25 h.p. 1700 RPM. Strap type mounting. Cool running, 30% efficiency. Motor parts—rotor and stator available for built-in applications.

RUSSELL ELECTRIC COMPANY

356 WEST HURON ST., CHICAGO 11, ILLINOIS

Manufacturers of **BALLENTINE MOTORS**

"Plane Torque" for Ground Work

Manufacturers, when reconverting, cannot fail to grasp the significance of the war-born advances in precision-tightened assembly. Makers of motors, refrigerators, radios, washing machines, etc., are using torque tightening in assembly, inspection and repair. Foremost among the hand tools performing this function is the JOMI torque wrench of Army Air Corps fame.

Precision Construction Builds Customer Confidence

Superior products, built with JOMI, will outsell and outlast those made by the old, uncontrolled method.

The dealer's service agency, using the factory manual on specific torques, insures 100% return business to factory agencies with this expert "know how."

The JOMI is Instantly Self-Converting

The JOMI torque wrench is instantly adjustable on the job. To adjust simply turn the micrometer guide on the barrel. (Two JOMI models range from 5 to 100 in/lbs., and 100 to 750 in/lbs.) Quick, fool-proof, the JOMI automatically breaks when predetermined torque is reached. No taps to feel, no clicks to hear, no dials to watch. Used with any standard head or socket, the mechanic consults his manual, sets his JOMI, locks it and tightens to specifications, tension automatically breaks...and the result is a PERFECT JOB.

GI (Good In*tensions*) JO says: *"No retooling, no fooling." Use a*

JOMI
TORQUE WRENCH

for unerring skill in Assembly Inspection Service

JO MANUFACTURING COMPANY
South Gate, California

capital, and to undermine public confidence in the system.

"To remedy this situation," he continued, "American business urges that the staff and facilities of the Patent Office be enlarged to insure an adequate examination of patent applications. In the same vein, industry proposes that patent applications be published before patents are granted in order to give the public an opportunity to bring forward any evidence which properly bears upon the patentability of the claims allowed.

"Industry favors those measures, also, which would facilitate the transaction of business with the Patent Office, simplify the prosecution of applications, and prevent delay in the publication and granting of allowed patents. It favors the bill which would ordinarily limit the life of a patent to 20 yr from the date on which the application is filed."

Mr. Gottschalk assailed proposals for compulsory licensing of patents, under which patent owners could be forced to share their rights with other concerns. He said such a system would dull the incentive to invent, cut down the investment of risk capital and deprive small business of one of its most effective weapons, the exclusive patent grant.

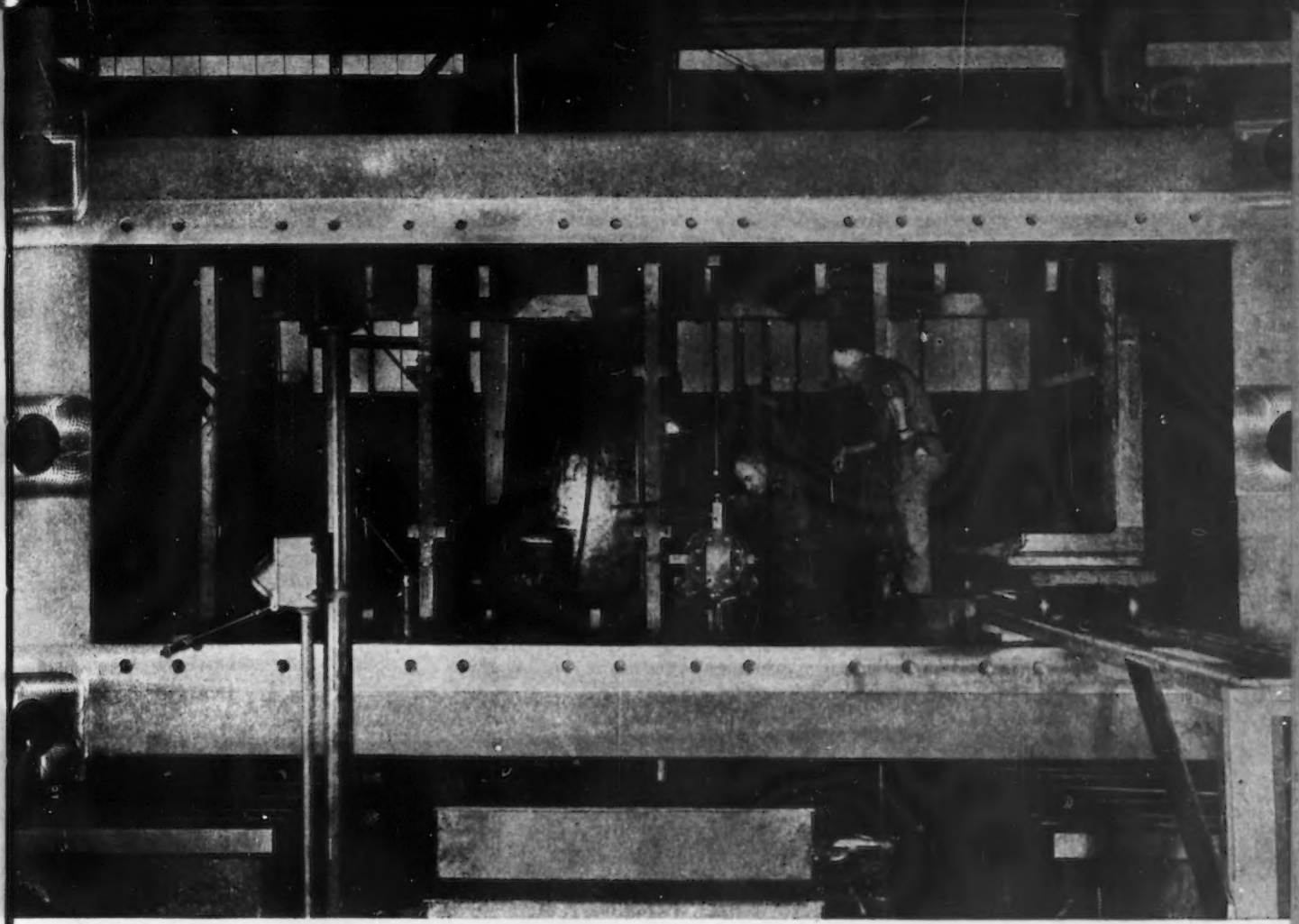
The experiences of Great Britain with its version of compulsory licensing were cited by another speaker, Thomas H. West, a specialist in foreign patents, as demonstrating that "there is no economic reason for a general system of compulsory licenses." Mr. West said that although such provisions had been in effect in England for a quarter of a century manufacturers appear to have made little use of them.

Revision of the English patent law is now under study by an official committee, Mr. West pointed out, and the evidence given before the committee so far "shows overwhelmingly that there is little demand for a general licensing system."

Stove Maker Expands Into Heavy Products

Detroit

• • • **Detroit Michigan Stove Co.** has set up a new division, Metal Fabricating Co., capable of handling and fabrication heavy products of many sorts. The new division will occupy a plant at 6450 McNichols Rd. E., used by the stove company for ordnance production during the war.



The Men . . . the Machines . . . the "Know How"

for heavy structure welding and machining at

LOWER FINAL COST

Back of this job is a combination of planning — machining — stress-relieving — handling — skill and facilities that speak for themselves

Welding four stories high to precision standards

The picture at left shows four men welding simultaneously on a bed for a two-thousand ton, four-point mechanical press. The size of this structure is apparent, but also of major proportions were the problems of welding, handling, stress-relieving, and machining—Problems which were met with the needed facilities, time-tested skill, and fourteen years of experience on large structure weldments. Closely controlled preparation to avoid chance of error, and accurate welding to close tolerances materially reduced machining time.

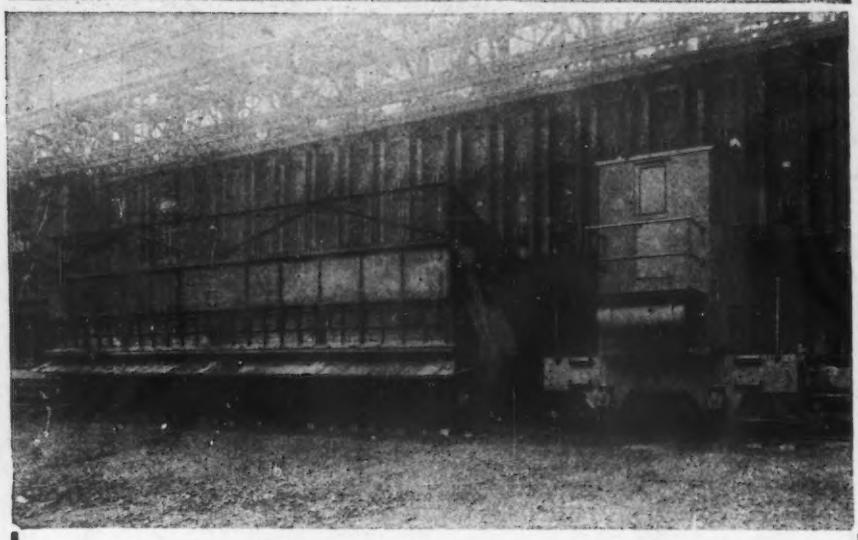
Machined complete in one basic setup

The same bed is shown above mounted on a floor type horizontal boring mill. This machine is equipped with standard and right angle boring heads, making possible innumerable combinations for milling, boring, and facing. Reversed once during the entire operation, the same basic setup was used throughout, minimizing machining costs—This example of time and money saving is characteristic of the entire job, and typical of the Danly reputation for precision welding and machining at *lower final cost*—a reputation for "know how."

DANLY MACHINE SPECIALTIES, INC. 2100 S. 52nd Ave., Chicago 50, Ill.

WELDED AND MACHINED AT *LOWER FINAL COST*

COKE OVEN EQUIPMENT



QUENCHING CARS AND LOCOMOTIVES

All Atlas Coke Oven Equipment is of heavy-duty construction permitting the peak operating conditions required in today's stepped-up production schedules. As a result of years of experience, Atlas is able to design and build equipment, to meet the requirements of each particular coke plant. Detailed information available on request.

Other ATLAS Products

Ore Transfer Cars
•
Scale Charging Cars
•
Electrically Operated Cars for Every Haulage Purpose

Locomotives for Switching and Interplant Haulage
•
Turntables

The ATLAS CAR & MFG. CO.
ENGINEERS MANUFACTURERS
1100 IVANHOE RD. CLEVELAND, OHIO U. S. A.

CED Sees Manpower Problem Basic To Postwar Agriculture

Chicago

• • • **The Research Committee** of the Committee for Economic Development has made public a policy statement on "Agriculture in an Expanding Economy," based on an 18 month study of the problems and prospects facing American agriculture.

Speaking as vice-chairman of the Research Committee, Chester C. Davis, president of the Federal Reserve Bank of St. Louis, outlined the committee's findings and stressed the fact that the serious problems ahead for American farmers are also the common concern of businessmen, labor and citizens generally.

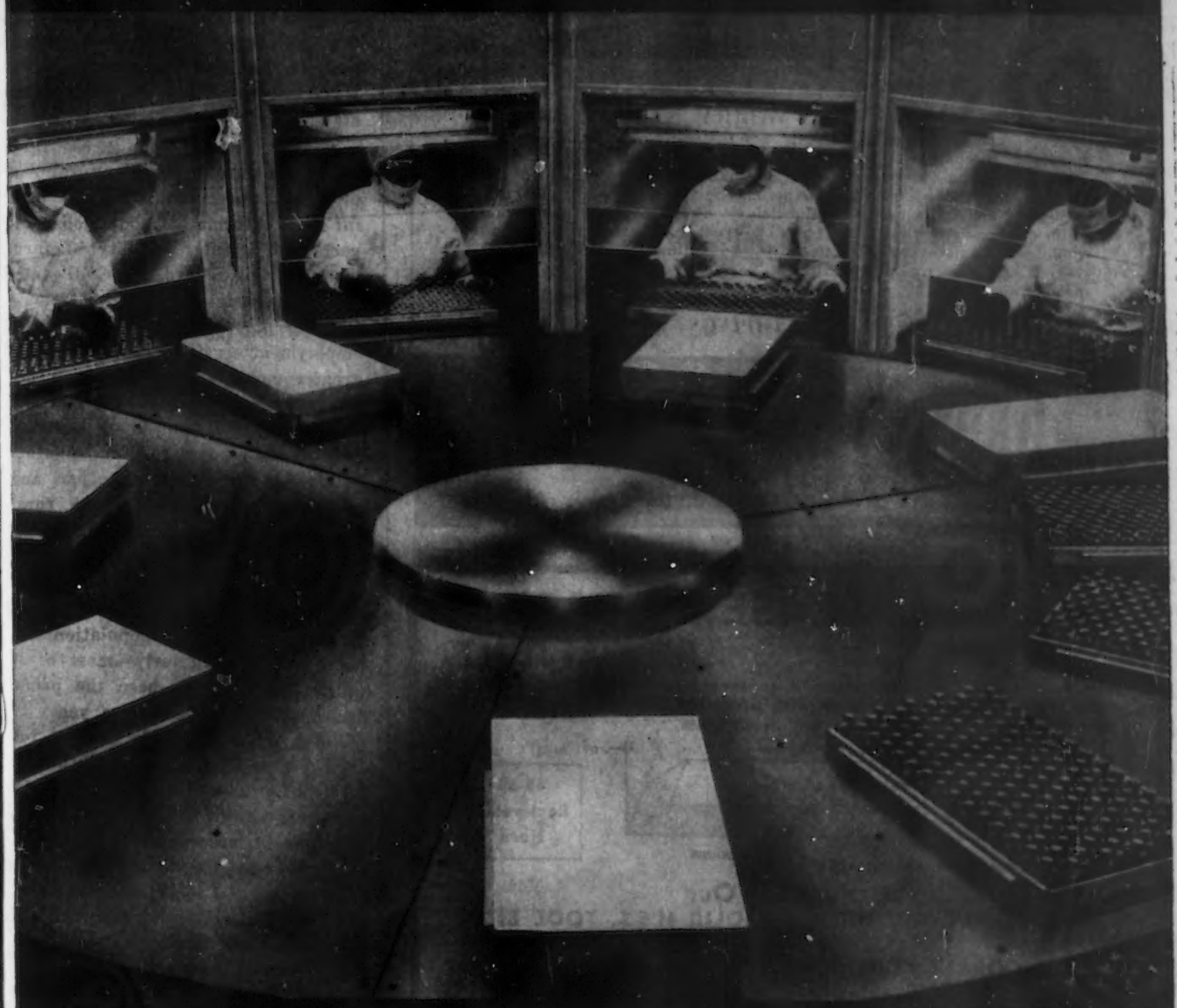
The CED statement calls particular attention to three focal problems facing postwar agriculture and traces the possible effects of these on the whole country. The committee sees as critical the oversupply of manpower that in peacetime had been backing up on the farms as a result of low industrial and commercial activity. Two other farm problems that receive special attention in the CED statement are the instability of farm income and the inadequacy of farm product price policy.

In releasing the CED statement, Davis pointed out that the vast remands of war had temporarily solved some of these farm problems but at the same time it had opened the way to their return in aggravated form when the demands of war and rehabilitation have been met. Farm product prices doubled during the war over the low 1939 level, and production went up one fourth. Yet, during the same period, against this tide of rising prices there was a movement off the farms. Farm population dropped from 30 to 25 million people. This helped to correct problems that had stemmed from the prewar oversupply of manpower on farms.

As the statement points out, the war also hastened the progress of agricultural technology. Thus, as postwar demand for farm products recedes from wartime levels, still less farm manpower will be required to produce the food, feed and fibre needed. Viewing this combination of factors, the committee warns against overemphasis on nostalgic "back to the 40 acres" suggestions for taking care of veterans and unemployed

STAINLESS STEELS

Most versatile of modern metals... their unique combinations of properties merit your consideration in designing for the future.



"Photograph courtesy Chas. Pfizer & Co., Inc."

Packaging the miracle drug... penicillin... calls for completely sterile conditions. Here the table must be the very acme of aseptic cleanliness... easy to clean and keep clean. Hence, it's chromium-Nickel stainless steel.

• • •

International Nickel are miners, smelters and refiners of Nickel, an important ingredient of the stainless steels, but do not produce stainless steels. If interested, please communicate with your established sources of supply for stainless steels.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N.Y.

A Memo

for the Plans you've been keeping under your Hat

NO NEED TO WORRY ABOUT SPRINGS

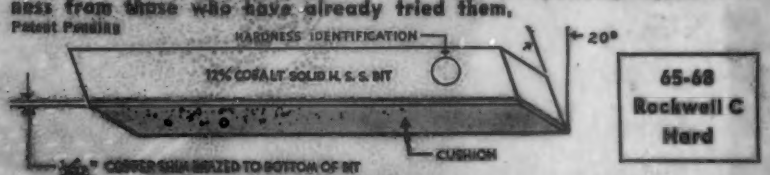
when your new plans take shape . . . the familiar functions of these dependable mechanical aids will be available instantly . . . ready to give your products a quick start on the way to new popularity and success.

At both B-G-R spring plants, experienced engineering and production skills will meet your needs without delay. From machine guns to vacuum cleaners, from wartime "traces" to trucks, from airplanes to automobiles . . . whatever shift your plans may require . . . you'll find that B-G-R springs are *quick converters* . . . easing the road back to normal production levels.

SPRINGS *SMALL STAMPINGS* *WIRE FORMS*

PLEASE, PLEASE, PLEASE
BE PATIENT

Due to the unprecedented demand created by our advertisements in various Trade Journals, coupled with a rapidly expanding repeat business from those who have already tried them,



Orders for Our
12% COBALT "CUSHIONED" SOLID H.S.S. TOOL BITS
and
12% COBALT "CUSHIONED" H.S.S. TIPPED TOOLS
are well beyond our present manufacturing facilities

WE ARE SORRY

to advise firms who have already placed their orders for these tools, that shipping dates will be more extended than we would like.

We can promise prompt shipment of approximately 20% of your order with the remainder to follow as quickly as our production schedule will permit.

This avalanche of orders has necessitated the following steps

1.—A NEW PLANT HAS BEEN PURCHASED AT GREAT MEADOWS, N. J., WHICH WILL PROVIDE SIX TIMES OUR PRESENT FLOOR SPACE.
2.—We are purchasing *$550,000.00* worth of *Brand New Machine Tools* in order to *speed up production.*
3.—We are employing a firm of prominent Industrial Engineers to help us with our unexpected problems.

Once these new facilities are in operation, we will again be able to advise good delivery dates.

We suggest that those who wish to give these superior tools a trial, that orders be placed with a minimum of delay.

Literature covering our entire line will be sent upon request.

Visit our Booth, C-106, National Metal Exposition, Cleveland, O., and see *Revolutionary Developments* in the *Cutting Tool Field*, including milling cutter bodies, milling cutter blades, tool holders, new type circular form tools, 6" and 12" grinders, etc.

GENERAL TOOL & DIE COMPANY Inc.

555 Prospect Street East Orange, N. J.

Phone: Orange 5-2500

war workers. It warns likewise against the current boom in land prices.

Since the manpower surplus on farms and the instability of farm earnings are tied directly to the level of industrial activity, the CED Research Committee sees as the primary solution the expansion of non-agricultural employment. This would serve the dual purpose of absorbing the under-utilized farm manpower and, at the same time, provide additional goods and services for a rising standard of living.

To aid in channeling excess farm manpower into non-agricultural employment, the committee sees a need for more information about job prospects and greater mobility of farm labor. In this regard, the CED statement suggests broader vocational training plus special types of rural employment services. It also suggests greater mobility of capital in a decentralizing movement of industry into areas of farm labor surplus. This would amount to a combination of moving farm workers to jobs and of bringing new jobs to the rural workers.

The statement observes, "the prerequisite to high agricultural income is an expanding economy. The fact that our employable population has been working regularly—most of it at good wages—has been the prime factor during the past five years in building up a profitable demand for the products of the farmer. With high levels of productive employment, an increased use of livestock products, which is in accordance with sound nutrition and the tastes of people, can become an effective means of utilizing agricultural resources. In addition, when non-agricultural employment is expanding, the economy can absorb the excess labor supply which, if held on the farms, depresses farm income per worker."

Buys Canadian Plant

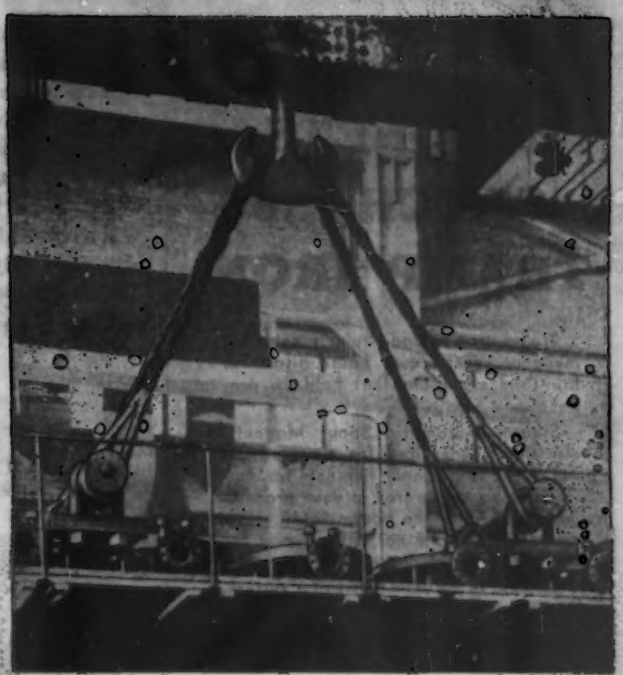
• • • Molybdenite Corp. of Canada Ltd., has purchased the La Corne Molybdenum project at Val D'Or, Que., for $75,000, the sale price to include, buildings, plant, machinery and equipment. The company also is given the right to purchase at an agreed value, all finished molybdenite and work in process, as well as stores and supplies.

Wire Rope SLINGS by Macwhyte

Made of wire rope to any length, size, and capacity, to meet your lifting needs.

ATLAS Round Braided Slings
DREW Flat Braided Slings
MONARCH Standard Slings
Y-GUARD Slings
LEVEL-LIFT Slings
GROMMETS
MULTIPLE-PART Slings

To make sure of maximum safety and economy, consult Macwhyte engineers. They will cooperate in designing the proper sling for your plant.



Send for Sling Catalog and Pictorial Literature!

A request on your company letterhead will bring them to you. Address Macwhyte Company, Kenosha, Wisconsin, or any of our distributors, mill depots, or factory representatives throughout the United States.

MACWHYTE COMPANY
2911 FOURTEENTH AVENUE, KENOSHA, WISCONSIN
Manufacturers of the PERFECT wire rope for your equipment
Left & Right-Lay Braided Slings · Aircraft Tie-Rods
Aircraft Cable · "Stik-Lok" Swaged Terminals
Manufactured under U.S. and Foreign Patents
Mill Depots: New York · Pittsburgh · Chicago · Ft. Worth · Portland Seattle · San Francisco · Distributors throughout the U.S.A.

Member National Safety Council

RIGHT-LAY **MACWHYTE SLINGS FOR INDUSTRY** LEFT-LAY
"Lifting safety to new heights"

Macwhyte Wire Rope Slings are made to meet the capacity of any crane built

Stearns Spout

MAGNETS CATCH the TRAMP IRON

Tramp Iron is Bad—ruins machinery, menaces safety, may cause disastrous fires and explosions that hold up production.

Stearns Automatic Spout Magnets, electrically energized for more power, will do a surprisingly fine job for you in catching tramp iron in your processing flow. And—the accumulated scrap metal will help, if not entirely pay for the magnetic equipment.

In sizes to fit your conveying system. Write us for operating data, describe your material, capacities, send layout drawing.

STEARNS MAGNETIC MANUFACTURING CO.

635 S. 28th St., Milwaukee 4, Wis.

Pulleys • Separators • Clutches • Brakes

Plans Construction Of Power Plant Project

Toronto

• • • Following an agreement reached between Ontario and Quebec, the Ontario Hydro Electric Commission will proceed with a hydro-electric development program involving an expenditure of $200 million, according to Dr. T. H. Hogg, chairman of the commission. The largest unit in the program will be construction of a $50 million power plant at Des Joachims, on the upper Ottawa River, which also will involve a further $20 million expenditure for transmission lines and terminal stations. The proposed plant will have a rated capacity of upwards of 400,000 hp. It is reported that the entire $200 million power project will take 5 yr to complete.

Other undertakings involved in the agreement include construction of a new power plant at Stewartville on the Madawaska River to generate 70,000 hp, and an extension of the DeCew Falls plant on the Welland River. Each of the latter two plants will cost $7.5 million. These plants will be ready for production during 1947, while the Des Joachims plant will be completed in 1949.

Material Holders Now Free in Disposal Plans

Washington

• • • Unless it is contrary to CPA orders or controls, a holder of materials that were purchased through WPB or CPA action may now use or dispose of them in any way he wishes. This relaxation on the use or resale of such materials was effected by CPA on Dec. 12 by an amendment to Section 944.11 of PR 1.

Previous to issuance of this amendment any material secured through ratings or allotments was required to be used, if possible, for the purpose for which such priorities assistance was granted. Direction 4 to PR 1, which established procedure for securing permission to use materials which could no longer be used for the original purpose has also been revoked.

If the intended use of the material is not permitted by some other CPA order still in effect, however, the holder of the material would still have to appeal from that order, CPA officials said.

At the same time the provisions of PR 15, concerning applicability of certain inventory and use restrictions to exports, were incorporated into PR 1 and PR 15 was revoked.

PANAMA CANAL: *The huge Miraflores lock with the Miraflores spillways in the background. Congress is now studying plans for canal expansion and defense.*

Electrolytic Iron Pilot Plant Output

New York

• • • Based on three years of intensive research and development work, Butler Bros., St. Paul, Minnesota, are now operating a large scale electrolytic iron powder plant at their mining site in Cooley, Minnesota.

A commercial plant is scheduled for completion in the latter part of 1946 which will manufacture tailor made powder blends to suit the requirements of fabricators of metal powder parts. Typical charcteristics of two grades of iron powder produced in the pilot plant are listed below:

		Type A	Type B
Purity		99+ pct Fe	99+ pct Fe
Screen analysis			
	+ 80	0.00 pct	.....
− 80	+100	.01	.....
−100	+150	1.51	0.00 pct
−150	+200	9.04	0.03
−200	+250	6.58	0.36
−250	+325	19.65	8.96
−325		63.21	90.65
Hydrogen loss		0.4 pct max.	0.4 pct max.
Flow		35 sec/50 gm	38 sec/50 gm
Apparent density		2.6 g/cc	2.7 g/cc
Physical properties		Typical values for flat test bars pressed at 30 tons per sq. in. and sintered at 850 deg. C. for one hour at temperature in dry H_2.	
Ultimate tensile		22,000 lb. per sq. in.	23,500 lb. per sq. in.
Pct elongation in 1 in.		8	10

Koppers Buys Company

Pittsburgh

• • • J. N. Forker, vice president, Koppers Co., Inc., Tar and Chemical Division, has announced that negotiations are in progress for the acquisition by Koppers of all of the capital stock of Wailes Dove-Hermiston Corp., producers of bituminous protective coatings, in exchange for the issuance by Koppers of 15,550 shares of its common stock and the payment of $100,000 in cash.

Products of Wailes Dove-Hermiston are related to those presently produced by Koppers.

General offices and the main factory of Wailes Dove-Hermiston are in Westfield, N. J. There are other plants in East St. Louis, Ill., and Houston, Texas. The company manufactures, distributes and applies a variety of special bituminous composition coatings primarily for the protection of steel and iron surfaces from the effects of corrosion. Principal markets are in the marine field, for oil, gas and water pipelines, sewage disposal systems, hydroelectric conduits, gates and dams, gasoline, water and oil storage tanks and structural and industrial buildings.

WELDISKS "eat" the toughest job, with greater safety, without chipping their "teeth"!

The secret is a new cement BOND . . . stronger than any yet developed! The "teeth" (the abrasive) can not come loose from the backing under the most severe use . . . result is *longer life* with greater *safety!*

Weldisks have the toughest "teeth" in commercial use today – electric furnace treated aluminum oxide, and that spells – *faster cutting!*

Weldisks have a special, 3-ply backing: 1 layer of fibre, specially treated and pressed for double strength and hardness, to keep Weldisk edges from going "flabby"; 2 layers of heavy cloth, encasing the fibre, to keep the fibre from cracking when bent!

Finally, Weldisks are cured by a new process that ends curling and warping.

Try Weldisks on the toughest job you have. Fill out the coupon below. We'll ship you free samples of the type required!

NAME.....

ADDRESS.....

Size.....

Grit.....

Operation.....

Abrasive Products, Inc.

SOUTH BRAINTREE 85, MASSACHUSETTS — MAKERS OF JEWEL COATED ABRASIVES

RECONVERSION THAT CLICKS

• To a golfer one of life's pleasurable moments—be he dub or expert—is the resounding click at the impact of club head and ball.

The lively spring which we make for the Daisy Air Rifle is a quality product. Its action, typical of the materials used throughout in the construction of this sturdy gun, satisfies a normal urge in young Americans.

It is a pleasure for us to know that our springs contribute to Daisy's preeminence in their field. Perhaps too we can make *your* reconversion click.

Phone Holly 2211
or from Detroit
dial Cherry 4419

AMERICAN SPRING OF HOLLY, INC.
HOLLY, MICHIGAN

October Settlement Of Contract Terminations Reached $1.5 Billion

Washington

• • • Over 27,000 terminated war contracts representing $1.5 billion in canceled commitments were settled by government contracting agencies during October, Robert H. Hinckley, Director of the Office of Contract Settlement, has announced. These October settlements reduced the number of terminated contracts still to be settled to 84,400 and the value of canceled commitments to $36.6 billion.

"Encouraging as this progress is, there are still many terminations for which contractors have not yet filed claims," Mr. Hinckley said. "On behalf of the government, which is anxious to give industry its honorable discharge from war production, we again urge all those contractors who have not yet filed their claims to do so at once, for only after they do so can the government contracting agencies settle their terminations."

Plants were being cleared rapidly during October in the face of a volume of plant clearance requests three times greater than last July, Director Hinckley reported. During October over 25,000 requests for the removal of termination inventories were received. Requests for the removal of government-owned plant equipment numbered 2500. Of the 17,200 requests completed during October, more than 65 pct were completed in less than 40 days and less than 6 pct required over 60 days.

During October the War Dept. settled over 19,000 terminations with a canceled commitment value of $1 billion and the Navy Dept. 5000 contracts with canceled commitments amounting to $391 million.

At the end of October the War Dept. has received claims from contractors on 10,558 of the 45,000 fixed-price terminated contracts pending settlement, and the Navy had received 2,737 claims from contractors on a total of 30,500 fixed-price cancellations still pending settlement.

Granite City Dividend Out

Granite City, Ill.

• • • For the first time in its history, Granite City Steel Co. will not pay a year-end dividend this year, G. Hayward Niedringhaus, president, announced last week.

Although company operations have been at near record volume, greatly increased labor and materials cost prevent the payment, he said.

"Since 1941, our labor costs have risen $1,750,000 a year and the cost of raw materials has gone up $2,250,000," he said. "The dollar volume of business in both years was very nearly the same.

"As against that $4 million in cost, the OPA this year granted a nominal price advance which represented an increased revenue of only $400,000."

YANK WATER SUPPLY: *Japanese children are spectators at a U. S. Army purifying station on the outskirts of Osaka, from which comes all drinking water for the 98th Division.*

Organize Welding Suppliers Group To Encourage Cooperation

Dayton, Ohio

• • • Companies engaged in distribution and reselling of welding equipment and supplies have organized the National Welding Supply Assn., with principal office here.

The objectives of this association are set forth "to promote and maintain such constructive cooperation among welding equipment and supply distributors as will advance their mutual interests; inspire the observance of high business standards; stimulate the adoption of such business methods as will make for efficient and profitable operation; encourage adherence to sound policies and practices; correct faulty procedures and eliminate commercial evils; all to the end that the welding supply business may retain its place and identity as an essential and efficient service in the distribution of welding equipment, supplies and gases."

At an initial meeting recently held, an organizational board of directors was chosen consisting of Herbert G. Weiler, Weiler Welding Co., Dayton; G. G. Garman, Purity Cylinder Gases, Inc., Grand Rapids, Mich; Ralph Chase, Chase Welding Supply Co., Benton, Ill; V. S. Rice, Virginia Welding Co., Charleston, W. Va.; and J. D. Hopper, J. D. Hopper Welding Supplies, Anderson, Ind. Other companies represented at the meeting which chose this board included Welders Supply & Equipment Co., Richmond, Va.; Willard C. Starcher, Spencer, W. Va.; O. K. I. Welding Supply Co., Cincinnati; Mahoning Welding Supply Co., Youngstown; Maine Oxy-Acetylene Supply Co., Auburn, Me.; Saginaw Welding Supply Co., Saginaw, Mich.; Welders Sales and Service, Youngstown, Ohio; Welders Supply Co., Canton, Ohio; and Wilbur Welding & Supply Co., Jackson, Mich.

Orders New Equipment

Toronto

• • • Canadian National Railways has placed an order with National Steel Car Corp., Hamilton, for 15 new streamlined cars, 10 baggage and 5 express, to be used for fast passenger train service. This is the first order placed in connection with Canadian National Railways' big 1946 equipment program. The new cars will be 72 ft inside by 9.5 ft wide and 13.5 ft from rail to roof.

CHILLED SHOT DIAMOND GRIT

Airless or centrifugal operating machines require Heat-Treated Shot or Heat-Treated Steel Grit.

The ordinary Shot and Grit will not do. They break down too fast and wear away quickly. In other words—expensive at any price.

Our Shot and Grit were made expressly for use in airless machines.

It simply means—
More cleaning at much less cost.
More cleaning and less dust at less cost.

And, remember—any old size won't do.

There is a correct size of Shot and Grit to obtain maximum results.

If cleaning grey iron, malleable iron, or steel drop forgings, we can save you money.

Let us prove it!

HARRISON ABRASIVE CORPORATION
Manchester, New Hampshire

Round Strand
Flattened Strand
Standard & Preformed

WHY not let "HERCULES" (Red-Strand) Wire Rope help you meet present day production requirements and still maintain a reasonable margin of profit? You will quickly discover that "HERCULES" is a dependable ally—not only in today's fight against increasing operating costs—but also in your endeavor to speed up production.

Made Only By **A. LESCHEN & SONS ROPE CO.** Established 1857
5909 Kennerly Avenue, St. Louis 12, Mo.
New York • Chicago • Denver • San Francisco • Seattle • Portland

MB

MERRILL Brothers

Can Supply You with

Drop Forgings

Made to specifications and the way you wish them.

Drop Forged Volz Clamp

for lifting any type of flat surfaced objects such as steel plates, barrels, angles, etc. They hold with bulldog tenacity.

Drop Forged Turnbuckles

in all standard sizes, types, etc., but in only one quality — the best.

Eye Bolts Clevis Nuts Etc.

of standard sizes.

Write us for your requirements.

MERRILL BROTHERS

Under same family management since 1860

56-71 Arnold Avenue, Maspeth, N.Y.

Approve Newly Formed Foundrymen's Group

Chicago

• • • Establishment of a chapter of American Foundrymen's Assn. at Mexico City, Mexico, has been approved by the association in response to a petition signed by 56 prominent foundrymen in the Mexico City area.

Interest in formation of a Mexican chapter developed as the result of visits to the United States by members of the Mexican foundry industry during the past year. In September, an organizational committee was formed consisting of Ernesto Villalobos, general manager, Cía Constructora de Maquinaria S.A.; Manuel Goiccechea, general manager, Herio Malleable de Mexico, Fundiciones de Fierro y Acero S.A.; A. Zapata, manager, Fierrio Esmaltade; Enrique Molina, production manager, La Fundición La Mexicana and Nicholas Covacevich, Foundry Supplies and Equipment, all of Mexico City.

Approval of the new group gives the association 32 active chapters, including one in Mexico and two in Canada.

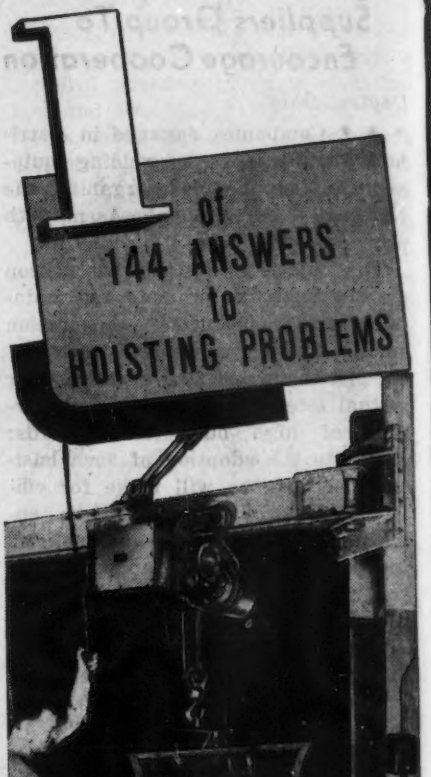
ATSC Cites Scrap Leader For Civilian Services

Dayton

• • • Mr. W. J. Wolf, vice-president of the Institute of Scrap Iron and Steel, was recently awarded the War Dept. Emblem for Meritorious Civilian Service, by Brig. Gen. E. W. Rawlings, Chief of the Procurement Div., ATSC.

General Rawlings, in reviewing Mr. Wolf's work, stated that through his bold and courageous actions, the functions of plant clearance had been expedited, and that his excellent foresight on market analyses had been instrumental in saving many thousands of dollars for the War Dept. Further, Mr. Wolf's loyalty and devotion in giving his time without compensation had furthered the interests of plant clearance and had established harmonious relationships between the vast dealer organizations and the Army Air Forces.

Mr. Wolf, head of Wolf and Company, Hamilton, Ohio, previously served as Deputy Director, Salvage Div., WPB, prior to his service with the Army Air Forces.



A cleaning operation required frequent lifting of a basket of parts in and out of the tank.

A Reading Electric Hoist with unit construction provided a special solution without special engineering cost. The built-in trolley permitted easy movement. The rigid arm push button gives control of both motions. The D.C. motor and controller were also standard mechanisms.

The Reading Electric Hoist unit construction plan gives you 144 combinations of standard mechanisms to give special solutions to your materials handling problems.

For full information, write for "144 Answers to your Hoisting Problems".

READING CHAIN & BLOCK CORPORATION
2101 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

READING HOISTS

THE IRON AGE SEMI-ANNUAL INDEX

JULY—DECEMBER, 1945, Vol. 156

Chilton Co., 100 East 42nd Street, New York 17, N. Y.

WEST VIRGINIA UNIVERSITY
MAR 6 1946
LIBRARY

Illustrated Articles Indicated by *

A

Absenteeism:
Drops, Following VE-Day, July 12 p 98

Acid Electric Furnace Carbon Control, by Charles Locke*, Oct 18 p 69

Acid Openhearth Research Assn.:
Openhearth Statistics for 1944, Nov 22 p 112

Adams, W. B., and Dickenson, D.:
Corrosion Performance of Blackplate in Cans, Nov 15 p 59

Adel Precision Products Corp.:
Hydraulic Power Package*, Oct 18 p 73

Adhesives:
Pliobond, All-Purpose Synthetic Adhesive*, Oct 11 p 70
Synthetic Rubber, B. F. Goodrich Co., Aug 16 p 77

Aero Equipment Corp.:
Impact Wrench, Aug 30 p 55

Aetna-Standard Engineering Co.:
Rack-Type Drawbench Developed*, Aug 30 p 82

Aget-Detroit Co.:
Dust Collector*, Aug 16 p 76

Aging and Stretching 24ST Aluminum by Louis Ecker*, Aug 30 p 36O

Aging of 75S Aluminum Alloy, by Dr. W. L. Fink, J. A. Nock, Jr., and M. A. Hobbs, Nov 1 p 64

Agriculture:
CED Sees Manpower Problem Basic to Postwar Agriculture, Dec 27 p 130

Air Reduction Co.:
Gas Cutting of Stainless Aided by Fluxing System*, Aug 9 p 61

Aircraft:
ATS to Scrap $50 Million of Surplus Material, Oct 11 p 107
Airliner Converting Under Way, July 19 p 138
AAF Exhibits Latest Weapons at Wright Field "Air Fair", Oct 25 p 151
Aluminum—Alloy R303 Meets Need of Industry*, Oct 4 p 74
Bayer Aluminum Scrap Recovery Depends on Cost and Freight Factors, Oct 11 p 101
Bell Gets New Contract for Latest Target Plane, Aug 2 p 126
Boeing Unveils New Triple-Threat Plane, Nov 15 p 90
Chevrolet Converting Plant to Jet Test Work, July 12 p 98
Conolon, a Plastic Laminate for Parts Fabrication*, July 12 p 62
Douglas Plant to Close, Sept 20 p 109
Eastern Aircraft Signs Navy's Pretermination, July 12 p 92
Fighters Now Carry Autopilots, July 12 p 124
Fin Milling Machine, Sundstrand Machine Tool Co.*, Aug 9 p 77
Finishing Spur Gears for Engines*, Dec 27 p 46
Gas Ranges Shipped by Airway Freight, July 19 p 86
G.M. Reveals Newly Designed Engine, Sept 20 p 158
Germans Develop Antiaircraft Rocket Weapons*, Nov 15 p 111
Glenn Martin Contracts to Convert Transports for Passenger Service, Dec 27 p 68
Jet Propulsion Engines Unveiled*, Dec 6 p 117
Loading Practice for Air Cargo, Important Time and Cost Factor, Dec 13 p 120
Luscombe's All Metal Personal Planes Now in Production, Sept 6 p 166
P-80 Powered by Super G.E. Gas Turbine*, Aug 2 p 101
Pesco Fuel Booster Pump Raises Engine Power, Aug 16 p 149
Propeller Output at Nash Reduced Sharply, July 12 p 98
Skin Heating Prior to Riveting*, Sept 6 p 86
Soft-Grit Blasting of Cylinders at American Airlines*, Nov 22 p 65
Special Tooling for B-29 Engine Ordered Scrapped by Air Forces, Sept 20 p 112
Spiker Products, Inc., to Make Metal Hangars, Oct 25 p 152
Standby Program for Aircraft Plants in Postwar Era Proposed by AAF, July 26 p 136
Steel Castings Replace Forgings*, Nov 1 p 50
Steel Control Cables Increase Plane Maneuverability, Sept 20 p 159
Storage Center for Engines Established, Aug 30 p 92
Turbosupercharger Production Details*, Sept 6 p 88
Willow Run Builds Last B-24 Liberator, July 12 p 122

Aircraft-Marine Products, Inc.:
Adapters for Solderless Connectors, Oct 18 p 73
Connector Strips, Nov 22 p 82
Solderless Connector Strip, Oct 18 p 73
Solderless Terminals*, Nov 22 p 79

Airquipment Co.:
Division of Lockheed to Manufacture Airplane Equipment, Oct 25 p 84

Ajax Electric Co., Inc.:
Salt Bath Furnace*, Nov 15 p 79

Ajax-Electrothermic Corp.:
Induction Heater*, Nov 15 p 80

Albin, J.:
Marine Tests Rate Alloy Performance*, July 26 p 62
Sodium Hydride Process for Descaling Steel*, Nov 8 p 58
Soft-Grit Blasting of Cylinders*, Nov 22 p 65

Allegheny-Ludlum Steel Corp.:
Batcheller Promises Maximum Pressure for Postwar Selling, Sept 6 p 166
Buys Magnet Producing Co., Dec 13 p 158
Research and Production Expansion Planned, Sept 6 p 112
Selecting the Proper Heat-Resistant Steel, Nov 8 p 74
Tool Steels Based at Dunkirk, Nov 1 p 106
W. B. Pierce Heads New Alloy Sales Program*, Dec 13 p 140

Allen Optical Co.:
Goggle Station and Cleaner, Sept 13 p 75

Allis-Chalmers Mfg. Co.:
Arc Welding Electrodes, July 19 p 72
Electrode Holder, July 19 p 73
Expansion in Indiana, Aug 16 p 140
Pilot Plant to Study Concentration, Milling and Processing Established*, Nov 29 p 138

Alloy Rods Co.:
Welding Rod, July 19 p 73

Alloy Steels:
British EN Alloy Specifications, Nov 15 p 71
Creep Resistant, Aug 2 p 58
Cycle Annealing of Hypo-Eutectoid Steels*, Dec 13 p 69
Electrolytic Manganese vs. Ferromanganese Addition Agents, Dec. 6 p 80
Flash Welding Rings*, Aug 16 p 50
For Automotive Bolts*, Aug 30 p 47
German Stainless Steels, Dec 20 p 60
German Tool and Special Steels: Analyses, Sept 13 p 54A
J&L Markets New Steels, Otiscoloy and Jalloy, Oct 25 p 93
Lack of Super Steels Handicapped German Jet Program, Dec 6 p 118
New Low Temperature Steel for Gas Plant, Nov 15 p 119
Output Still Far Above Prewar Status, July 19 p 107
Price Control to Be Off Soon, Sept 27 p 95
Production vs. Total Steel, 1939-May 1945, July 19 p 107; June-September, Nov 22 p 120
Scrap Stockpiling Begun at Ravenna, Sept 20 p 168
SAE Restrictions Lifted, Aug 9 p 99
Trends in Production—Openhearth vs. Electric, 1935-May 1945, July 19 p 107; June-September, Nov 22 p 120
(See also Steel)

Alloys:
Aging of 75S Aluminum Alloy, Nov 1 p 64
Aluminum—Alloy R303*, Oct 4 p 74
Civilian Use of Alloying Agents Authorized, Aug 30 p 100
Early Aluminum From British and German Airships*, Dec 27 p 51
Eatonite, New Valve Facing Alloy*, Oct 25 p 58
Heat Treating Beryllium Copper for Peak Performance*, Dec 6 p 58
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Influence of Overaging on Aluminum, July 19 p 66
Marine Tests Rate Alloy Performance*, July 26 p 62
Metallography of Alcoa 75S Alloy*, Oct 4 p 64
Milling Heavy Sections of 14ST Aluminum*, Oct 18 p 62
New Aluminum Alloys Containing Small Amounts of Beryllium, Nov 15 p 158
New Bearing Alloy Conserves Tin*, Nov 29 p 64
Porosity in Navy G and M Metals and Red Brasses*, Nov 15 p 68
Precision-Cast Copper-Base*, (2 Parts) Nov 1 p 46; Nov 8 p 64
Spinning of Copper-Base Alloys*, Aug 30 p 42
Surface Finishing of Beryllium Copper*, Nov 15 p 60
(See also Nonferrous Metals; Steel)

Alrok Treatment Avoids Masking Cast-in Inserts, by A. J. Ferko, Oct 11 p 69

Alten's Foundry & Machine Works:
New Heat-Resisting Iron*, Aug 16 p 75

Aluminum:
Additional Cutback in Aluminum From Canada, July 26 p 146
Aging and Stretching 24ST Aluminum*, Aug 30 p 36-O
Aging of 75S Alloy, Nov 1 p 64
Aircraft Scrap Disposal to Produce 15 Million Lb of Secondary Metal*, Dec 20 p 104
Alcoa Answers Clark, Sept 20 p 111
Alcoa Breakup Recommended by Attorney General Clark, Sept 20 p 111
Alcoa Charges SPA's Program for Plant Disposal Seeks to Destroy It, Oct 25 p 105
Alcoa Competitors First in Aluminum Plant Disposal, Oct 4 p 118
Alcoa Introduces Aluminum Roofing Sheet, Nov 1 p 126
Alcoa Invades Sheet Market, Nov 22 p 92
Alcoa Smelting Plant Leases Canceled by RFC, Sept 13 p 106
Allison Purchases Foundry at Bedford, Ind., Oct 25 p 110
Alloy R303*, Oct 4 p 74
Avoiding "Smut" From Aluminum Etchant, Aug 2 p 57
Bayer Scrap Recovery Depends on Cost and Freight Factors, Oct 11 p 101
Canada's Aluminum to Spain, Dec 6 p 126
Canning of Ordnance Required Half Million Tons of Steel, Aluminum*, Aug 16 p 104F
Castings to Be Used in French 800-lb Cars, Dec 13 p 124
Columbia Metals Interested in Troutdale and Spokane Reduction Plants, July 26 p 92
Consumption and Inventories, First Quarter, Oct 4 p 136; Second Quarter, Nov 22 p 113
Controls Eased, Aug 2 p 134
Corrosion by Die Materials*, Sept 20 p 72
Davis Replies to Justice Dept. Attack on Alcoa, Dec 6 p 119
DPC Plant Ordered Closed by RFC, July 19 p 146
Determining Surface Resistance for Welding*, Aug 16 p 74
Early Alloys From British and German Airships*, Dec 27 p 51
Effect of Delayed Quench (Erratum, May 24, 1945) July 5 p 139
Fabricating High-Strength Alloys*, Dec 27 p 40

Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Influence of Overaging on Alloys, July 19 p 66
Jet Quench Minimizes Distortion*, July 5 p 78
Light-Metals Plants Disposal Plan Presented, Sept 13 p 105
Massillon Co. Buys DPC Plant to Make Aluminum and 18-8 Pots, Sept 27 p 136
Metallography of Alcoa 75S Alloy*, Oct 4 p 64
Milling Heavy Sections of 14ST Alloy*, Oct 18 p 62
New Heat-Treat Neutralizing Chemical*, Oct 4 p 82
No Utensils Pending War Releases, July 5 p 104
Olin Will Not Lease or Buy Tacoma Plant*, Nov 29 p 110
Pacific Northwest Irked by WPB's Terming Salem Plant Unessential, Aug 9 p 88
Performance and Structure of Anodic Coatings*, Nov 22 p 75
Postwar Anticipated Consumption, Sept 13 p 103
Postwar Marketing Revolves Around Cost and Volume, Sept 6 p 129
President Truman Wants No Subsidy, Oct 25 p 105
Price Ceilings Lifted, Aug 30 p 90
Primary Ingot Facilities, Nov 15 p 126
Restriction Lifted, July 26 p 113
Reynolds Alloy Truck and Trailer Body*, Nov 15 p 121
Reynolds Charts Postwar Developments, Sept 13 p 102
RFC Alumina Plant Leased to Reynolds Metal, Dec 20 p 112
Scrap Floor Prices Set Up by SPA, Oct 11 p 136
Scrap Market Demoralized Since VJ-Day, Aug 23 p 146
Sheet Price Fixed, Nov 15 p 126
Shipments Show Drop in August, Dec 6 p 126
Shot Peening Effect*, Dec 27 p 45
Steps for Taking Over Government-Owned Plants in Pacific Northwest Outlined, Sept 6 p 112
Surplus Sale to Alcoa Prohibited, Dec 27 p 92
Utensil Standard Proposed, Nov 8 p 124
Wartime Expansion in U.S. Capacity to Be 50 Pct Surplus, Nov 15 p 136
West Coast Aluminum Plants Close, Sept 20 p 98

Aluminum—Alloy R303, by P. P. Ziegler, L. E. Householder, and H. N. Logsdon*, Oct 4 p 74

Aluminum Co. of America:
Aging of 75S Aluminum Alloy, Nov 1 p 64
Aluminum Roofing Sheet Introduced, Nov 1 p 126
Answers Clark Demands, Sept 20 p 111
Attorney General Clark Recommends Breakup Due to Monopoly, Sept 20 p 111
Charges SPA's Program for Plant Disposal Seeks to Destroy It, Oct 25 p 105
Competitors First in Aluminum Plant Disposal, Oct 4 p 118
Davis Replies to Justice Dept. Attack, Dec 6 p 119
DPC Forging Plant Ordered Closed by RFC, July 19 p 146
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Invades Sheet Market, Nov 22 p 92
Orders for High Voltage Line Obtained, July 26 p 146
Professorship Established at CIT*, Dec 27 p 93
RFC Cancels All Smelting Plant Leases, Sept 13 p 106
Ruled Out by Western States Council, Oct 18 p 84
Solves Wage Raise Issue, Nov 22 p 140

Aluminum Co. of Canada:
Additional Cutback in Aluminum Effected by RFC, July 26 p 146
Drops Out of Cartel, Dec 6 p 170
Shipshaw Power Development Defended, Sept 27 p 130

Aluminum Ore Co.:
Bayer Aluminum Scrap Recovery Depends on Cost and Freight Factors, Oct 11 p 101

American Air Filter Co.:
Electronic Air Filters*, Dec 6 p 84
Oil Mist Collector*, Sept 13 p 75

American Airlines, Inc.:
Soft-Grit Blasting of Cylinders*, Nov 22 p 65

American Brake Shoe & Foundry Co.:
Expansion in Pittsburgh Area, Nov 29 p 132

American Bridge Co.:
Plans Changes at Gary Plant, Oct 18 p 101

American Car & Foundry Co.:
A. W. Clarke Sees Standardization for Passenger Cars, Dec 6 p 118
Halts 8-in. Shell Output, July 12 p 100
Reduction in Hourly Rate of Pay for Mechanics Denied by WLB, Oct 18 p 82

American Chain & Cable Co.:
Wire Rope, Oct 4 p 87

American Electroplaters' Society:
Effect of Surface Finish on Electroplated Coatings, Sept 13 p 71

American Forge Co.:
Buys Gilmore Interest in Pacific States Steel, Oct 25 p 82

American Foundrymen's Assn.:
Foundry Sands and Mold Materials Report No. 2, Dec 13 p 90
Mexican Chapter Formed, Dec 27 p 138
National Administration Congress*, Aug 16 p 134

American Institute of Mining & Metallurgical Engineers:
Electric Furnace Steel Conference, Dec 13 p 75

American Institute of Steel Construction:
Fabricated Structural Steel Bookings and Shipments, June, Aug 2 p 93; July, Aug 30 p 77; August, Oct 11 p 95; September, Nov 1 p 91; October, Dec 6 p 123
Reconversion Points Outlined, Aug 2 p 125

American Iron & Steel Institute:
Data on Specification for Design of Light Gage Steel Discussed, Nov 1 p 136
Employment, Hours and Wages in the Steel Industry, May, July 19 p 95; June, Aug 16 p 99; July, Oct 4 p 128; August, Oct 18 p 95; September, Nov 22 p 107; October, Dec 20 p 97
Finished Steel Capacity, Production and Shipments, 1944 revised, July 19 p 102; May, July 19 p 103; July, Sept 27 p 99; August, Oct 25 p 97; September, Nov 15 p 116; October, Dec 20 p 108
Finished Steel Shipments for Armament, 1941-45, Sept 6 p 160
Ingot Production, January-June 1945, July 19 p 104; July, Aug 16 p 104H; August, Sept 20 p 112; September, Oct 18 p 99; October, Nov 15 p 117; November, Dec 13 p 111, Dec 20 p 103
Peacetime Steel Rate Significant, Nov 1 p 98
Pig Iron by Districts, June, Aug 9 p 151; July, Sept 6 p 125; August, Oct 11 p 107; September, Nov 1 p 101; October, Dec 6 p 119
Simplified Bar and Shape Standard Proposed, Dec 6 p 92
Steel Industry Needs 55,550 More Worers Survey Reveals, Oct 4 p 128
Steel Product Summary, 1940-44, July 12 p 94
Yearbook Features Important Steel Developments, Sept 20 p 140

American-La France Foamite Corp.:
Fire Extinguisher, Sept 13 p 74

American Machine Tool Distributors' Assn.:
Disposal of Surplus Machines, Main Topic at Meeting, Nov 29 p 133
New Officers, Nov 29 p 133
Outlines Solution to Surplus Machine Tool Problem, Nov 29 p 100

American Management Assn.:
Reports Annual Wages and Wage Guarantees as More Practicable, Nov 8 p 142

American Molded Products Co.:
Plastic Pipe Seals*, Aug 16 p 77

American Optical Co.:
Acetate Safety Goggles*, Aug 16 p 78
Anti-Fog for Lenses, Face-Shields and Welding Plates, Oct 11 p 74
Invisible Ultraviolet Rays Proven Harmful, Nov 1 p 51
Plastic Berger Loupe*, Aug 30 p 56
Safety Glove*, July 19 p 74

American Road Builders' Assn.:
South American Engineers to Get Training in U.S. Highway Construction, July 19 p 118

American Rolling Mill Co.:
Earnings, Third Quarter, Nov 15 p 170
Merger With Rustless Announced, Sept 27 p 95

American Society for Metals:
Bulletin to Cover Veteran Re-employment, Oct 11 p 133
Burr Describes Statistics Used in Correlating Metallurgical Data*, Oct 25 p 148
Dr. Horger Emphasizes Fatigue Failures of Mechanical Materials*, Nov 22 p 158
Elects Officers at Annual Meeting, Nov 15 p 188
Pittsburgh Chapter Holds One Day Technical Session, Nov 15 p 156

American Society of Heating and Ventilating Engineers:
Research Laboratory Planned, Nov 1 p 126

American Society of Mechanical Engineers:
Analysis of Processes for Cutting Metals Described by Merchant and Zlatin, Oct 4 p 119
Group Sees Atomic Power for Gas Turbine Drive, Sept 13 p 126
Presents Honors and Awards at Annual Meeting in N.Y., Dec 13 p 152
Tool Engineers Advise Low Milling Speeds to Chicago Chapter, July 19 p 132

American Society of Tool Engineers:
Exposition to Be Held in Cleveland, Apr 8-12, Nov 22 p 151

American Solder & Flux Co.:
Metal Coating Stick, Sept 13 p 73

American Standards Assn.:
Briggs Cites Impact of War on Science in Peace, Dec 13 p 121
Changes Constitution for Postwar Activity, July 5 p 110
Elects Officers, Dec 13 p 120
Publishes List of Industrial Standards, July 12 p 100
Surface Designation, Sept 27 p 66

American Steel & Wire Co.:
New Steel Control Cables Increase Plane Maneuverability, Sept 20 p 159
Stainless Steel Wire at Waukegan Works, Dec 27 p 92

American Ventilating Hose Co.:
Ventilating Hose*, Nov 8 p 83

American Welding Society:
Elections at Annual Meeting*, Nov 1 p 118

Andrews Steel Co.:
RFC Cancels Lease, Sept 20 p 113

Anodic Coatings on Aluminum: Performance and Structure, by F. Keller and J. D. Edwards*, Nov 22 p 75

Anodizing:
(See Cleaning and Finishing)

Ansboro, D. J.:
SPA Leaves Door Open for Geneva Steel Plant Disposal, Oct 18 p 106
Symington Favors West Coast Interest's Ownership of Steel Mills, July 26 p 108

Anthony, John:
Brass Mills Begin Postwar Expansion and Dispersion*, Nov 15 p 120
Brazil's New Steel Industry About Ready for Production*, July 5 p 108
Conquest of Malay and Indies Will Not Ease Tin Shortage*, July 19 p 97
Nickel Industry Girds for Peace With New Products, Sept 6 p 126
Postwar Fontana Operation Depends on Lower Cost, Nov 29 p 102

Antimony:
Content in Storage Batteries Limited, Sept 6 p 178
Import Prospect Not Good, Oct 18 p 112
Increases in Supplies Not Expected, Sept 13 p 152
Metal Scarce; Ore Available, Sept 6 p 178
Ore Shortage, Oct 4 p 164
Restricted Now, Sept 20 p 166
Supply Better, Nov 1 p 108

Apco Mossberg Co.:
Torque Screw Driver, Sept 6 p 99

Apex Electrical Mfg. Co.:
Vacuum Cleaners Eliminate Chip Interference*, Nov 8 p 77

An Appraisal of Subzero Hardening of High Speed Steel*, (2 Parts) July 26 p 54; Aug 2 p 64

Arcos Corp.:
Alloy Electrode, July 19 p 73
High Temperature Electrode, July 19 p 73

Army and Navy "E":
Awards, July 12 p 76; July 19 p 86; July 26 p 94; Aug 16 p 90
Awards End, Sept 13 p 97

Army Ordnance Assn:
Sets Forth Program to Safeguard Nation, Nov 8 p 156

Arnold Engineering Co.:
Purchased by Allegheny-Ludlum, Dec 13 p 158

Arthur, J. B., and MacKusick, M. H.:
Trepanning Welded Joints for Defects*, Sept 6 p 80

Assessing Wear Due to Friction and Corrosion, by P. M. Fisk*, Oct 25 p 65

Assn. of Iron & Steel Engineers:
Australian Steel Industry Innovations Reported, Oct 18 p 108
Elects F. H. Dyke, President for 1946*, Sept 27 p 97

Atomic Energy:
Atomic Bomb Sidelights*, Aug 23 p 112
Electric Power From Atomic Research, Dec 6 p 96
Heating Likely to Be First Application, Sept 20 p 148
Japanese Cyclotron Destroyed*, Dec 13 p 92
Klein Sees Domestic Uses in Distant Future, Dec 6 p 168
Power Plant Seen as Possibility Within Ten Years*, Oct 18 p 171
Proposed Legislation to Impede Research, Nov 8 p 144
Scientists Discuss Atomic Power, Dec 20 p 107
(See also Bombs, Atomic)

Aurora Equipment Co.:
Work Bench, Sept 13 p 75

Australia:
Iron Knob Estimated to Contain 100 Million Tons of Ore*, Sept 20 p 119
Steel Innovations Reported at Engineers Meeting, Oct 18 p 108

Automatic Roto Shaving for Fine Surfaces, by Walter Praeg*, Dec 27 p 56

Automotive Bolts, by A. S. Jameson*, (2 Parts) Aug 23 p 64; Aug 30 p 47

Automotive Council for War Production:
Dissolved Oct. 1, Sept 20 p 118
Nears End, Aug 23 p 88

Automotive Industry:
Aluminum to Be Used in French 800-lb Cars, Dec 13 p 124
Bantam Sets Up Line for Heavy Trailers, Oct 4 p 117
Basing Point System Ramifications May Mean New Method of Auto Pricing, Oct 11 p 80
Bold Engine Designs Will Power New Autos, Oct 18 p 76
Borg-Warner Prepares Fully Automatic Transmission for Ford, Oct 4 p 116
Bumpers of Low-Alloy High-Tensile Steel Expected to Find Wider Field in Postwar Automobile, July 5 p 80
Canada Cuts Restrictions on Sales, Dec 13 p 136
Chevrolet and Nash New Models, Nov 1 p 72
Congressional Action to Aid Employment Proposed at National Metal Trade Assn. Meeting, Dec 6 p 162
Detroit Labor Tension Rushing Toward a Climax, Nov 22 p 109
Detroit's Big Question Is "How Soon?" as Confusion Follows Jap Capitulation, Aug 23 p 86
Export Sales Urged in Britain, Nov 8 p 118
Fisher Body Div. to Expand 40 Pct From Prewar Operations, Nov 22 p 111
Fisher Plants in Ohio District Planned, July 26 p 113
Ford Begins Building 1946 Cars*, July 12 p 66
French Renault Works' Nationalization Is Compromise: Steel Limiting Factor to Present Output, Dec 13 p 94
General Motors on Threshold of Major Strike, Nov 15 p 82
G. M. Plans New Research Center*, July 26 p 84
German Low Cost Car Under Production by U.S. Army Ordnance, July 26 p 140
Government Report on Profits Outlook Takes Wind Out of Sails, Nov 8 p 86
Graham-Paige Joins With Henry Kaiser to Plan Two New Lines of Cars, Aug 2 p 74
How Military Vehicles Perform, July 5 p 121
Jack & Heintz Enters Industry, Nov 1 p 74
Jeeps Arrive in Canada, Nov 1 p 98
Kaiser Car on West Coast Carries 76 Hp Continental July 26 p 112
Kaiser-Frazer Plans Production of Own Automobile Bodies, Dec 20 p 76
Kelsey-Hayes Parts Shipments Resumed, Dec 13 p 84
Labor and Management Are Colliding Head-on in the Ford and G.M. Negotiations, Dec 27 p 66
Labor Crisis to Delay Large Production, Oct 11 p 82
Little Progress Toward Solving Materials Shortages Problem, Aug 9 p 80
Machine Tool Purchasing Declining Gradually, Oct 11 p 134
More Taxicabs, July 26 p 103
Nash to Build in Mexico, Oct 18 p 78
OPA, CIO Cause Some Industry Misgivings, but Schedules Still Hold, Aug 30 p 58
OPA Meets With Auto Parts Group in Move to Fix Car Prices, July 5 p 82
OPA Plagued by All Factors in Pricing, Nov 15 p 82
OPA Sets Price Ceilings Amid Unfairness Charges, Nov 22 p 110
Olds Unveils Models*, July 26 p 84
Output Moving Slowly, Dec 20 p 74
Parts Prices Freed as Outline of Detroit Prices Is Shown, Aug 30 p 86
Passenger Car Production Schedules, Oct 25 p 74
Pontiac Starts 2-Door Model, Oct 18 p 78
Postwar Willys Jeep a Jack-of-All Trades*, July 19 p 76
Price Determination, Inquiries for Steel, Manifest Progress Toward Resumption of Output, Sept 6 p 102
Price Increases Explained in Britain, Nov 1 p 99
Price Regulation MPR 594 Governing New Passenger Cars, Sept 13 p 80
Quotas on Production Lifted, Aug 30 p 60
Reconversion Hump Reached and Passed, Oct 25 p 74
Registrations by Makes, Aug 2 p 76
Rocket-Type Vehicle*, Dec 6 p 164
Settlement of 30 Pct Issue Likely to Set Pattern for Nation, Oct 11 p 76
Stainless Steel Used as Basic Material in Service Station Design*, Nov 1 p 74
Strike Issue in G.M. Is Not Wages, but Union's Voice in Setting Prices*, Nov 29 p 70
Strikes Delaying Production, Sept 6 p 131
Studebaker to Double Production Capacity, Sept 27 p 74
Supplies of Raw Materials Adequate With Exception of Tin, Aug 2 p 114
Suspension of Price Control on Parts, Sept 6 p 128
Thirty Pct Pay Raise Dispute Reports No Progress, Oct 18 p 78
Union Plans Strike in All General Motors Plants, Sept 20 p 88
UAW on the Retreat for First Time Since 1937: Ford's Aggressive Attitude Puts Union on the Defensive, Dec 13 p 82
War's End to Give Open Track Signal: Volume of Million With End of Quotas Foreseen for 1945, Aug 16 p 80
White Motor Announces Expansion, Nov 1 p 74

Automotive Tool & Die Mfrs. Assn.:
To Continue Tool Service, Oct 18 p 134

Autotron Co.:
Electronic Gaging Instrument, Sept 6 p 100

Ayres, Brig. Gen. Leonard P.:
Condemns New Policy to Put Costs Up and to Hold Prices Down, Nov 29 p 80
Recommends U.S. Limit Wage Grants to Necessities of Life, Nov 1 p 132

B

B & W Co.:
Straight Edge*, July 19 p 74

Bailey Meter Co.:
Gas Analyzer and Recorder, Nov 1 p 70

Baima, P. J.:
Shock Absorbing Cushion, Oct 25 p 71

Baker, W. A.:
Porosity and Shrinkage in Nonferrous Castings, Aug 30 p 36L

Baldwin Locomotive Works:
Annual Report, 1945, Nov 1 p 101
Deflectometer for Plastics*, Nov 1 p 68
N. J. Central Orders Locomotives, Oct 25 p 96; Nov 8 p 117
Plans Large Volume of Export Business, Sept 20 p 116
Ram Pacer*, Nov 1 p 69
Testing Machine, Aug 16 p 76
World's Most Powerful Locomotive Delivered, Dec 13 p 142

Ball, Leslie W.:
X Ray Standards for Purchasing Castings*, Nov 22 p 62

Barium:
New Process Promises Cheap Supply, Oct 11 p 101

Barium Steel Corp.:
Earnings, First Nine Months, Dec 13 p 163

Barmasel, S. H.:
Budd Output Will Take 18,000 Tons of Stainless a Year, Oct 25 p 97
Percentage Gain in Ingot Capacity Greatest in West, Dec 13 p 116

Barnaby Mfg. & Tool Co.:
Rotary Stock Stop*, Dec 20 p 68

Barrett Equipment Co.:
Brake Drum Lathe*, Sept 27 p 70

Bars:
Bethlehem Centralizes Bar Mills*, Nov 15 p 77
Bethlehem Expands Bar Facilities, Oct 11 p 108
Bond Tests on Concrete Reinforcing Bars Reported Complete, July 5 p 104
Cold Finished Bars Price Adjustment Made, Aug 2 p 100
Oregon Steel Mills Land $2 Million Order to France and Russia, Nov 15 p 90
Simplified Bar and Shape Standard Proposed, Dec 6 p 92

B.G.F. Manufacturers Representatives Co.:
Formed by Harry H. Bennett, Oct 18 p 76

Basing Points:
ABC of System*, Oct 4 p 120
Allegheny Bases Tool Steels at Dunkirk, Nov 1 p 106
Basic Change in Steel Price System May Be Underway in 30 Days, Sept 27 p 95
C-T Sets New Basing Points for Electrical Sheets, Dec 27 p 92
Cement Institute Setup Under Attack by Government, July 5 p 101
Definitions, Oct 4 p 122
Dept. of Justice and Federal Trade Commission Refuse to Comment on Stainless Steel Change, Oct 4 p 94
Expansion Now Underway for More Steel Items, Oct 18 p 97
Fundamental Steel Basing Point Change Imminent, Sept 20 p 109
Keokuk for Silvery Pig Iron, Dec 27 p 92
New, for Stainless Steel, Sept 13 p 99; Sept 20 p 112; Oct 11 p 105
Ramifications May Mean New Method for Pricing Automobiles, Oct 11 p 80
U.S. Steel Bases Hoops at Youngstown and Birmingham, Ala., Nov 15 p 119
Universal Cyclops Establishes Titusville as Stainless Basing Point, Nov 1 p 98

Bates Expanded Steel Corp.:
Bought by E. S. Christiansen, Nov 22 p 121

Battelle Memorial Institute:
Electrical Micrometer*, Sept 6 p 100

Bausch & Lomb Optical Co.:
Improved Measuring Projector*, Aug 30 p 55
Zinc Coating for Illuminator Plate*, Sept 13 p 72

Bay State Abrasive Products Co.:
Diamond Hand Hones*, Oct 25 p 70

Bearings:
Assembly by Sampling Principle*, Oct 11 p 53
Ball Bushing, Thomson Industries, Inc.*, Sept 6 p 99
Dodge-Timken Bearings, Dodge Mfg. Co.*, July 12 p 64C
Metallurgy of SAE 52100 Ball Bearing Steel*, July 5 p 54
New Alloy Conserves Tin*, Nov 29 p 64
Self-Lubricating, Morganite Brush Co.*, July 12 p 64C
Timken to Help Russia Build Plant, Aug 9 p 99

Behr Products Co.:
Boring Bar, Oct 25 p 70

Bell Aircraft Corp.:
New Contract for Latest Target Plane, Aug 2 p 126
New Engine to Be Made, Oct 18 p 144
Organization Changes for Peacetime, Oct 11 p 103
Plants Getting 48-hr Work Week Exemption, July 5 p 116

Bellows Co.:
Drill Press Feed*, Oct 25 p 72

Belts:
(See Power Transmission)

Bennett, Harry H.:
Forms B.G.F. Manufacturers Representatives Co., Oct 18 p 76

Berlenbach Foundry Co.:
Expansion Announced, Oct 25 p 105

Beryllium:
Heat Treating Beryllium Copper for Peak Performance*, Dec 6 p 58
New Aluminum Alloys Containing Small Amounts of Beryllium, Nov 15 p 158
Sintered for X-ray Tube Windows*, July 26 p 68
Surface Finishing of Beryllium Copper*, Nov 15 p 60

Bethlehem Pacific Coast Steel Corp.:
Organized, Nov 8 p 96

Bethlehem Steel Co.:
Bar Facilities Expanded, Oct 11 p 108
Buys Government-Owned Plants at 20 Million, Sept 27 p 98
Centralizes Bar Mills*, Nov 15 p 77
Foreign Shipments Since War's End, Sept 27 p 93
Nine Refrigerated Vessels to Be Built for United Fruit, Oct 4 p 111
Openhearth and Rod and Wire Mill to Be Built on Pacific Coast, Nov 1 p 80
Pacific Coast Subsidiary Formed, Nov 8 p 96
Sillimanite and Magnesite Sleeves and Nozzles, Dec 13 p 75
Stockpiles Wartime Ore Reserves From Chile, Nov 1 p 100
Top vs. Machine Charging Basic Arc Electric Furnaces, Dec 13 p 77
Turns Down $2 a Day CIO Demand, Nov 1 p 94
Unconcerned Over Disposition of Western Steel Plants, Aug 2 p 100

Bethlehem Steel Corp.:
Earnings, Second Quarter, Aug 2 p 100

Birge, Henry:
Top vs. Machine Charging Basic Arc Electric Furnaces, Dec 13 p 77

Binkins Tool & Mfg. Co.:
Drawing Board*, Nov 8 p 84

Binks Mfg. Co.:
Spray Gun*, Dec 13 p 80

Blackplate:
Corrosion Performance in Cans, Nov 15 p 59

Blake, Edward, Co.:
Tap Grinder*, Nov 29 p 67

Blaw-Knox Co.:
Earnings, First Half 1945, Aug 2 p 99

Bliss, E. W. Co.:
Toggle Drawing Press*, Aug 2 p 72

Boeing Aircraft Co.:
Alrok Treatment Avoids Masking Cast-in Inserts, Oct 11 p 69

New Triple-Threat Plane Unveiled, Nov 15 p 90
Product Diversification Rumored, Oct 11 p 86

Bolts:
(See Fasteners)

Bombs:
Buzz Bombs Ordered, Aug 9 p 151
Germans Develop Antiaircraft Rocket Weapons*, Nov 15 p 111

Bombs, Atomic:
Development Kept Steel Industry Guessing for Years, Aug 9 p 101
Discussed at ASME Meeting, Dec 6 p 168
Germany Lacked Organization to Produce, Oct 4 p 142
Sidelights*, Aug 23 p 112

Bonding:
Clays, Nov 22 p 67
Pliobond, All-Purpose Synthetic Adhesive*, Oct 11 p 70

Borg-Warner Corp.:
Expansion in Home Equipment, Auto, Aviation, Agricultural, Nov 8 p 121
Prepares New Fully Automatic Transmission for Ford, Oct 4 p 116

Boring:
Autometric Machine, Kearney & Trecker Products Co.*, Sept 27 p 71
Bar. Behr Products Co., Oct 25 p 70
Boring and Facing Machine, Cross Co.*, Aug 9 p 77
Production Work on Jig Borers*, Aug 23 p 72
(See also Machining)

Bornholdt, W. J., and Scarbrough, H. E.:
Conveyorized Non-Decarburizing Heat Treatment of Gears*, Oct 18 p 54

Boron:
Effects in Steel, Oct 11 p 54

Borzdika, A. M.:
Chromium, Silicon and Aluminum Impregnation of Steel*, Oct 18 p 58

Botnik Motor Corp.:
Wrench*, Sept 6 p 100

Boyar-Schultz Corp.:
Knurling Tool*, Sept 6 p 99
Screw Machine Tools*, Sept 6 p 98

Boyer-Campbell Co.:
Band Saw and Metal Safety Guide*, Sept 6 p 98

Brady, George Stuart:
Choosing the Consulting Engineer, July 5 p 72

Brams, Stanley H.:
Detroit Labor Tension Rushing Towards a Climax, Nov 22 p 109
Electrical Appliances Outlook for Christmas Only Fair, Oct 4 p 111
Foremen's Assn. Gaining Ground in Steel Organizing Drive, July 12 p 88
Repair of Defective Gray-Iron Castings, Aug 9 p 74
Tungsten Carbide Machine Parts*, Sept 27 p 55
Turbosupercharger Production Details*, Sept 6 p 88

Brass:
Additional Mill Cutbacks Announced, July 5 p 142
Flash Welding of Sheet Brass*, Sept 13 p 55
Forging Production, 1935-45, Chart, July 12 p 134
Ingot Shipments Drop in June, Aug 9 p 136; July, Aug 30 p 81; October, Dec 6 p 126
Intangibles Confuse Mills' Plans, Aug 16 p 152
Mill Production Declines in August, Oct 4 p 164; Third Quarter, Nov 22 p 126
Mill Products Price Raise Stymied, Dec 13 p 124
Mills Begin Postwar Expansion and Dispersion*, Nov 15 p 120
New Procedure of Mill Products, July 26 p 146
Olin Consolidates Mill Facilities for Postwar Market*, Sept 6 p 132
Porosity in Navy G and M Metals and Red Brasses*, Nov 15 p 68
Titan Metal Will Act as Export Agent, Sept 13 p 152
(See also Nonferrous Metals)

Brass Forging Assn.:
Forging Tolerances, Dec 6 p 126

Brazil:
Buda Co. Organizes for Latin-American Market, July 12 p 128
Chromium Production Growing, Oct 4 p 164
Coal Production, 1939-44, Oct 18 p 132
Foundry at Volta Redonda Highly Mechanized for All Castings, Nov 1 p 142
Has Funds for Buying Road Machinery in U.S., Aug 2 p 98
Magnesite Deposits Thought Large, Sept 13 p 152
Pig Iron Production Grows, Oct 4 p 115
Volta Redonda About Ready for Production*, July 5 p 108
Volta Redonda Mill Production Delayed, Dec 20 p 108

Brazing:
Heat-Treated Parts*, Aug 16 p 54
Induction Brazing and Soldering*, Aug 9 p 56
Induction Brazing of Carbide Tips, Sept 27 p 62

Breitbart, Sidney:
Maximum Carbon in Carburized Cases*, Oct 11 p 50

Briggs Filtration Co.:
Acquires Clarifier Co., Dec 13 p 113

Briggs Mfg. Co.:
Reconversion to Cost $10 Million, July 19 p 98

Bristol Co.:
Running-Time Recorder*, Aug 30 p 56
Wire Belt Hooks, July 12 p 64D

British EN Alloy Specifications, by J. H. G. Monypenny, Nov 15 p 71

British Iron & Steel Institute:
Desch Elected President, Dec 13 p 96

British Nonferrous Metals Research Assn.:
Porosity and Shrinkage in Nonferrous Castings, Aug 30 p 36L

Broaching:
Hardened Involute Splines*, Aug 30 p 36P
Horizontal Machine, Zagar Tool, Inc.*, Nov 29 p 67
Sharpener, Great Lakes Broach & Gage Co., Aug 9 p 78
Special Purpose Machine, Hydraulic Machinery, Inc.*, Sept 27 p 70
Vertical Machine, Zagar Tool, Inc.*, Aug 9 p 78
(See also Machining)

Broaching Hardened Involute Splines, by Carl Himmelright*, Aug 30 p 36P

Bromhead, E. B., and Piper, T. E.:
Steel Castings Replace Forgings*, Nov 1 p 50

Brookings Institution:
Economic Structure Endangered by Wage Increases, Sept 27 p 78

Brophy, G. R.:
Cycle Annealing of Hypo-Eutectoid Steels*, Dec 13 p 69

Brown Instrument Co.:
Electronic Recorder*, Nov 1 p 68
Instrument Handles and Parts, Nov 1 p 68

Brown, Wiser:
Cost and Research Open New Fields to Magnesium Products, Sept 27 p 120

Browning, Victor R., & Co., Inc.:
Hydro-Electric Bucket*, Oct 4 p 85

Brush Development Co.:
Hypersonic Analyzer Betters Testing Technique*, Dec 13 p 74
Recording Galvanometer*, Nov 1 p 69
Rough Finish Measuring Head*, Aug 30 p 55

Bryant Heater Co.:
Builds New Plant at Tyler, Tex., Dec 20 p 110

Buda Co.:
Organizes for Latin-American Market, July 12 p 128

Budd, Edward G., Co.:
New York Central Buys 18-8 Double Bedroom Cars, Dec 27 p 96
Output Will Take 18,000 Tons of Stainless a Year, Oct 25 p 97
To Build C&E Stainless Steel Trains, Aug 2 p 126
War Plant Lease Will Provide for Peacetime Output, July 12 p 104

Buffalo Bolt Co.:
No Reconversion Tooling Task, Sept 13 p 138

Buffalo Turbine Corp.:
Axial-Flow Compressor*, Sept 13 p 73

Buick Div.:
Offers DPC 0.1 Pct of Cost for Tools, July 5 p 140
Planning Output of Near 550,000 Cars, July 26 p 86

Bullard Machine Co.:
Man-Au-Trol, Automatic Operation of Vertical Turret Lathes*, Oct 25 p 68

Bulldog Electric Products Co.:
Transfer Type Trolley*, Oct 18 p 73

Bureau of Mines:
Coal Research Work for Fiscal Year 1944 Covered in Annual Report, July 5 p 112
Electrolytic Manganese vs. Ferromanganese Addition Agents, Dec 6 p 80
Production of High-Grade Sponge Iron in Brick Plants Announced, Nov 15 p 110
Reports on Present Supply of Mineral Reserves in U.S., Nov 29 p 74
Wartime Statistics on World's Coal and Coke Industry Released, Oct 18 p 128

Burndy Engineering Co., Inc.:
Electrical Connectors*, Nov 22 p 82
Foot-Operated Hytool for Installing Hydents*, Oct 18 p 72
Hand Tool for Indenting Electrical Connectors*, Oct 18 p 72

Burr, Irving W.:
Describes Statistics Used in Correlating Metallurgical Data*, Oct 25 p 148

Bushings, Inc.:
Rubber Machinery Mounting*, Dec 6 p 81

C

Cable, H. E.:
Hidden-Arc Welding of 13-Gage Steel*, Nov 1 p 52

Cadmium:
CPA Limits Receipts, Nov 29 p 110
Placed on Rated Orders, July 19 p 146
Supply Tight, Oct 18 p 112

California Metals Co.:
Expands, Dec 20 p 108

California Shipbuilding Corp.:
Magnetic Holddown Chucks Facilitate Plate Welding*, July 19 p 68
Repair Operations Started, July 12 p 76
Standardization of Shackles*, July 12 p 50
Trepanning Welded Joints for Defects*, Sept 6 p 80
Twin-Arc System Improves Welding Efficiency*, Sept 27 p 58

Campbell, Tom:
ABC of Basing Point System*, Oct 4 p 120
Alloy Steel Output Still Far Above Prewar Status, July 19 p 107
Civilian Order Pattern to Shape Up Quickly After Reconversion, Aug 16 p 101
Geneva Steel Plant May Close Down Soon, Disposal Plans Uncertain, Sept 20 p 110
Stainless Base Price Move Boon to Consumers, Sept 13 p 99
Steel Industry Facing Enforced Export Allocations, Dec 13 p 107
Steel Union Wage Action Marks Time for Auto Action, Dec 13 p 111

Canada:
Aluminum, Ltd. Drops Out of Cartel, Dec 6 p 170
Aluminum to Spain, Dec 6 p 126
Close to Self Sufficiency in Steel, Oct 11 p 97
Coal and Coke Production, 1943-44, Oct 18 p 132
Cobalt Supply, Oct 25 p 110
Copper, Nickel and Lead Production, September, Dec 6 p 126
Copper, Nickel Output Decline in 1944, Nov 8 p 124
Copper Producers Optimistic, Oct 11 p 136
Copper to Go to U.K., Dec 20 p 116
Cuts Restrictions on Automotive Sales, Dec 13 p 136
Dominion Steel Will Diversify Products, Nov 8 p 165
Dropping Steel Orders, Aug 9 p 151
Duty Placed on Diesel Engines, Oct 11 p 97
Export Trade, October 1945, Shows Decline Compared With 1944, Dec 20 p 101
Exports of Base Metals, Dec 20 p 116
Faces Heavy Losses of Exports to U.K. Markets, Nov 22 p 119
Ferroalloys Production, May, July 12 p 134; June, Aug 16 p 149; July, Sept 13 p 100; August, Oct 18 p 104
Government Received $34,173,000 for Surplus Disposal, Nov 8 p 120
Industrial Expansion to Affect Postwar Production, Dec 6 p 114
Industries Planning Conversion to Postwar Activity, July 12 p 116
Industry Reconversion to Include New Major Products, Dec 6 p 167
International Nickel Cuts Production, Nov 22 p 126
Iron and Steel Production, May, July 12 p 85; June, Aug 16 p 148; July, Sept 13 p 100; August, Oct 18 p 95; September, Nov 22 p 157; October, Dec 13 p 92
Jeeps Arrive, Nov 1 p 98
Last Steel Control Revoked, Dec 6 p 115
Miners Are More Optimistic Now, Nov 8 p 124
Mining Handbook Issued, Oct 18 p 170
Molybdenite Corp. Buys La Corne Molybdenum Project, Dec 27 p 132
Pig Iron Production, August, Oct 18 p 104; September, Nov 22 p 121
Power Plant Project Planned at Des Joachims, Dec 27 p 134
Production Value of Steel Items in 1943 Shows 22 Pct Rise, July 26 p 107
Purchasing Regulations Lifted by Cancellation of CMP, Oct 18 p 176A

Railways to Expend $138 Million, Nov 1 p 99
Reconversion Being Pushed but Temporary Unemployment Continues, Sept 6 p 133
Sees U.S. Best Copper Customer, Dec 13 p 136
Shipbuilding Operations Halted, Sept 13 p 110
Shipbuilding Will Continue After War Production Ceases, Sept 20 p 114
Shipshaw Defended by Alcan, Sept 27 p 130
Steel Buying Active, Nov 1 p 99
Steel Labor Troubles Approach, Nov 8 p 108
Steel Mills Join U.S. in Search for Skilled Labor, Sept 27 p 100
Steel Output, August, Oct 18 p 95; 1923-45, Dec 13 p 114
Steel Specialties Imports From U.S. to Continue, Oct 25 p 98
Surplus War Plant Sales Being Rushed, Nov 29 p 84
Victory Aircraft Co. Being Sold to Hawker-Siddeley, Aug 9 p 104
War Plants Selling at Bargain Prices, Nov 15 p 96

Carbide & Carbon Chemicals Corp.:
Engine Lubricant, Aug 16 p 77

Carbide Die & Mold Co.:
Sectional Carbide Molds Facilitate Recutting*, Oct 25 p 50

Carbide Tools:
Brazing Cemented Carbide Tips, Newcomer Products, Sept 6 p 99
Core Drills, Tungsten Carbide Tool Co.*, Oct 25 p 72
German Cutting-Tool Steel Substitutes Revealed Inferior, Nov 22 p 155
Milling Cutters, Nelco Tool Co.*, Sept 6 p 97
Precision Grinder, E. F. Hager & Son, Sept 27 p 71

Carboloy Co., Inc.:
Seeks to Establish Seniority Procedure, Nov 1 p 96
Tungsten Carbide Machine Parts*, Sept 27 p 55

Carburization:
An Appraisal of Subzero Hardening of High Speed Steel*, (2 Parts) July 26 p 54; Aug 2 p 64
Gas Carburizing*, (3 Parts) Oct 18 p 50; Oct 25 p 52; Nov 1 p 60
Maximum Carbon in Carburized Cases*, Oct 11 p 50

Carlson, C. Georg:
Metallic Impurities in Steel, Dec 6 p 71

Carnegie-Illinois Steel Corp.:
Construction Rounds Out Finishing Facilities, July 26 p 105
Extras and Deductions Listed, July 5 p 105
Farrell Ordnance Plant for Sale, Oct 18 p 126
40-hr Work Week Inaugurated in Mills, Aug 23 p 142
Four Furnaces Brought into Blast, Nov 22 p 123
Gary Sheet and Tin to Increase Its Coke Reduction Capacity, Nov 22 p 112
Heavy Gage Galvanizing Line Under Erection at Irvin Works, Dec 27 p 80
Production Technique for Stainless Steels at Duquesne Plant, Dec 13 p 76
Outlaw Strike Costs 25,500 Tons of Steel, July 12 p 90
Petroleum Strike Threatens Operation of Openhearths, Sept 27 p 95; Oct 4 p 109
Sharon Steel Purchases Farrell Works; Takes Over on Dec. 15, Nov 15 p 108
Silicon Strip in Coils to Be Produced at Irvin Works, Nov 15 p 109
Small Steel Companies Lose by Sale of Farrell Works, Dec 13 p 112
Soaking Pit Strike at Edgar Thomson Stops Steel Output, Aug 2 p 101
Survey Shows Servicemen Have New Skills, Aug 16 p 113
Tinplate Record Set by Irvin Works, July 19 p 101
Transfax Simplifies Strain Analysis Studies*, Nov 8 p 81
Twin-Motor Drives in Hot Reducing Mills*, Oct 11 p 58

Carpenter Steel Co.:
Flexible Stainless Hose*, Sept 13 p 72

Cassen, B., and Clark, D. S.:
Fluoroscopy of Light-Alloy Castings*, Nov 1 p 54

Cast Iron:
Borings Sintered by Greenawalt Machine, Dec 20 p 50
Vanadium Additions, Dec 13 p 78
(See also Castings, Ferrous)

Casting, Centrifugal:
Graphite Molds for Short-Run Castings*, Sept 6 p 83
Spinning of Copper-Base Alloys*, Aug 30 p 42
Three Types*, Aug 23 p 74

Casting, Die:
Checking of Dies*, Sept 20 p 64
Close-Fit Threads*, Aug 30 p 50
Die Design*, Sept 13 p 48
Heavy Duty Machine, H. L. Harvill Mfg. Co.*, Dec 27 p 64
High Pressure Casting Machine, H. L. Harvill Mfg. Co.*, Dec 27 p 62
Light Machinery, Inc. Established, July 12 p 134

Casting, Precision:
Precision-Cast Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64
Precision Founding*, (9 Parts) Try Pattern, July 12 p 46; Glue Mold, July 19 p 62; Preparation of Plaster, July 26 p 70; Plaster-Base Investment Molds, Aug 2 p 51; Master Pattern and Matrix, Aug 9 p 67; Pattern Waxes, Aug 16 p 70; Centrifugal Casting, Aug 23 p 74; Coring Problems, Oct 11 p 62; Vacuum Method, Nov 22 p 68
With Plastic Patterns*, Nov 15 p 54

Castings, Ferrous:
CC Ratings for Iron Foundry Industry Announced by WPB, Nov 15 p 162
Ceiling Price Set on "Short Orders", Sept 6 p 131
Controlling Quality of Steel Castings*, July 19 p 50
Iron Foundry Output Expected to Be 9.5 Million Tons, Oct 18 p 102
Large Steel Castings in West Coast Plant*, Nov 22 p 61
Malleable Castings Still Reported in Heavy Demand, Sept 27 p 80
Most Steel Products Advanced in Price by OPA, Dec 6 p 120
New Rod Permits Machinable Cast Iron Welds*, Nov 15 p 122
OPA Freezes Sales of Cast Iron Resellers, Nov 22 p 140
OPA Studies Price Setup, Oct 11 p 82
Prices on Gray Iron Castings Upped 10 Pct, Oct 4 p 142
Quality Control of High-Tensile Steel Castings*, Nov 29 p 52
Repair of Defective Gray Iron Castings, Aug 9 p 74
Steel Castings Made by the Thermit Process*, Aug 9 p 55
Steel Castings Replace Forgings*, Nov 1 p 50
Tank Casting Output Replaced by RR Order, July 12 p 90
X Ray Standards for Purchasing Castings*, Nov 22 p 62

Castings, Nonferrous:
Alrok Treatment of Aluminum Alloys Avoids Masking Cast-in Inserts, Oct 11 p 69
Aluminum Castings Urged, Aug 2 p 134
Copper and Brass Castings Ceiling Price Increased, Sept 27 p 136
Fluoroscopy of Light-Alloy Castings*, Nov 1 p 54
New Pricing Method for Light Metals, July 12 p 134
Porosity and Shrinkage, Aug 30 p 36L
Precision-Cast Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64
X Ray Standards for Purchasing Castings*, Nov 22 p 62

Caterpillar Military Engine Co.:
Conveyorized Non-Decarburizing Heat Treatment of Gears*, Oct 18 p 54

Caterpillar Tractor Co.:
Adds to Its Line, Nov 8 p 88

Cement Institute:
Basing Point Setup Under Attack by Government, July 5 p 101

Cemented Carbides:
German Industry*, Aug 30 p 36A
Tungsten Carbide Machine Parts*, Sept 27 p 55

Cerrobend:
Corrosion of Aluminum by Die Materials*, Sept 20 p 72

Chatillon, John, & Sons:
Torque Tester*, Sept 6 p 100

Checking of Diecasting Dies, by J. L. Erickson*, Sept 20 p 64

Chelius, E. J.:
Production Technique for Stainless Steels, Dec 13 p 76

Chemicals:
Aid Given Germany by France and Belgium, Nov 22 p 152
$200 Million Expansion Program Planned by Industry, Dec 27 p 94

Chevrolet Motor Div.:
Aircraft Engine Production Centered in Buffalo Area, Aug 16 p 126
Trucks Assembled at South Gate; Large Addition Planned, Aug 16 p 82

Chicago Mfg. & Distributing Co.:
Welders' Chipping Hammer*, July 19 p 74

Chicago Tool & Engineering Co.:
Under-Water Cutting Torch*, Oct 11 p 73

Chicago Vitreous Enamel Product Co.:
Surplus Material Identification*, Oct 18 p 53

Chile:
Iron and Steel Plant Near Concepcion, Sept 13 p 109
Loan for Steel Mill Approved, Sept 20 p 94

China:
China-America Group Forms Machine Tool Advisory Committee, Oct 18 p 152
Chrysler Service Group to Form Repair Network, July 5 p 82
Envisaged as Potential Postwar Market for U.S. Goods, Sept 6 p 108
Estimated Ore Reserves, July 5 p 110A
Technical Men Visit U.S. for Training, Dec 6 p 166

Chromium:
Brazil's Production Growing, Oct 4 p 164
High Carbon Ferrochromium Controls Lifted, Aug 9 p 136
Philippine Shipments to Start, Sept 6 p 178
Tightness Due to Ore Import Control, July 19 p 146

Chrysler Corp.:
Cuts Announced, Aug 23 p 96

Chrysler Export Corp.:
Service Group Leaves for China to Form Repair Network, July 5 p 82

Cincinnati Machine & Tool Co.:
Organized as Subsidiary of Cincinnati Milling, Nov 15 p 124

Cincinnati Milling Machine Co.:
Cutting Fluid and Dispensing Reservoir*, Dec 6 p 82
Organizes Machine Firm, Nov 15 p 124

Civilian Production Administration:
Administrator Small Outlines Functions for Peacetime Production, Nov 8 p 90
Created to Succeed WPB*, Oct 11 p 100
Estimates 1/3 of Warplants May Be Used for Civilian Production, Dec 20 p 110
Inventory Curbs on Strike-Bound Plants Modified, Dec 20 p 112
176 Key Advisory Committees Retained, Nov 8 p 140
Outlines How to Get Priorities After Year Ending, Dec 20 p 136
Relaxes Tinplate Packing Restrictions, Nov 22 p 123
Second War Powers Act Extension Expects Early Passage in Congress, Dec 6 p 90
Steel Strike May Call for Allocations, Dec 27 p 114
Strategic Metals and Minerals Stocks, October 31, Dec 13 p 173
To Handle Selling of German Equipment, Dec 6 p 170
WPB Labor Advisory Groups Held, Dec 6 p 144

Clark, D. S., and Cassen, B.:
Fluoroscopy of Light-Alloy Castings*, Nov 1 p 54

Clark Door Co., Inc.:
Door Unit*, Nov 8 p 82

Clark, Robert H., Co.:
Adjustable Spotfacers*, Dec 20 p 71

Cleaning and Finishing:
Abrasive Tool, Master Specialty Co.*, Aug 30 p 54
Acid Cleaner, Pennsylvania Salt Mfg. Co., Sept 20 p 85
Alloy Finish for Wire, Johnson Steel & Wire Co., Inc., Dec 13 p 79
Aluminum Cleaner, Kelite Products, Inc., Sept 20 p 85
Anodic Coatings on Aluminum*, Nov 22 p 75
Brass Cleaner, Cowles Detergent Co., Sept 20 p 85
Buffing Tool, Keller Tool Co., Dec 13 p 79
Cleaning Machine for Metal Parts, Magnus Chemical Co., Inc., Dec 13 p 80
Cold Cleaning Solvents, Gray-Mills Co.*, Sept 20 p 84
Cold Tank Cleaner, Turco Products, Inc., Dec 13 p 79
Color Glue, Krieger Color & Chemical Co., Sept 20 p 86
Color Merchandising of Metal Products, Dec 6 p 77
Comparisons of Pickling, Degreasing, Cleaning Procedures, Sept 6 p 75
Detergent Wetting Agent, Standard Scientific Supply Corp., Sept 20 p 86
Detergents, Optimus Detergent Co., Sept 20 p 84
Dressing Tool, Industrial Abrasives, Inc., Aug 30 p 54
Effect of Surface Finish on Electroplated Coatings, Sept 13 p 71
Electrolytic Cleaner, W. D. McDermid Chemical Co., Sept 20 p 84
Electropolishing, Sept 13 p 64
Electropolishing of Stainless Steels*, July 12 p 64
Galvanizing Line Under Erection at C-I Irvin Works, Dec 27 p 80
How to Protect Motor and Machine Components*, Oct 18 p 64
Insulator for Plating Racks, Michigan Chrome & Chemical Co.*, Sept 20 p 86
Iridite Protective Finish, Rheem Research Products, Inc., Sept 20 p 85
Lacquers and Enamels, Comparative Data, Army and Navy Specification, Sept 27 p 64
Materials Pump, Stewart-Warner Corp.*, Sept 20 p 86

Mechanized Coating of Ingot Molds*, Oct 18 p 61
Metal Coating Stick, American Solder & Flux Co., Sept 13 p 73
Metal Parts Cleaner, Sturdy-Built Equipment Corp.*, Sept 20 p 84
Metal Surface Testing Equipment and Procedures, Sept 27 p 68
Metallizing as a Production Process*, Dec 13 p 72
Metals, Finishes, and Finishing Processes, (4 Parts) Sept 6 p 70; Sept 13 p 64; Sept 20 p 74; Sept 27 p 65
Painting and Dye Coloring of Metals, Sept 20 p 81
Parts Cleaning Machine, Park Chemical Co., Sept 13 p 74
Parts Cleaning System, Gray-Mills Co.*, Sept 20 p 84
Phosphate Type Finish, Du-Lite Chemical Corp., Sept 20 p 85
Pickling Agent, Kelite Products, Inc., Sept 20 p 86
Pickling Agent, Troxide, Waverly Petroleum Products Co.*, Sept 20 p 86
Plastic Coating Compound, Eronel Industries*, Sept 20 p 85
Plastic Dip Tank, Phillips Mfg. Co.*, Sept 20 p 85
Plastic Dyeing Compound, Krieger Color & Chemical Co., Sept 20 p 86
Plastic Surface Sprayed on Aluminum Sheets in British Housing Plan*, Nov 8 p 119
Plater's Cleaner, Kelite Products, Inc., Sept 20 p 85
Plating Baths for Increased Corrosion Resistance, Paint Adhesion and Appearance, Sept 20 p 79
Portable Cleaning Machine, Park Chemical Co.*, Nov 8 p 83
Portable Washing Machine, Industrial Washing Machine Corp.*, Sept 13 p 74
Pre-cleaner and Deoxidizers, Optimus Detergents Co., Dec 13 p 80
Protectie Coating for Gages, Janson Gage Co.*, Aug 30 p 56
Rinsing and Drying Machine, Optimus Equipment Co.*, Dec 13 p 80
Roller Coating, Japan Co., Dec 13 p 79
Rust Inhibiting Oil, Mitchell-Bradford Laboratories, Sept 20 p 85
Sander-Grinder, Porter-Cable Machine Co.*, Sept 20 p 85
Shot and Grit Standards, Sept 13 p 54P
Skin Heating*, Sept 6 p 86
Sodium Hydride Process for Descaling Steel*, Nov 8 p 58
Soft Grit Blasting of Cylinders*, Nov 22 p 65
Solutions for Stripping Electrodeposited Coats, Sept 13 p 70
Spray Gun, Binks Mfg. Co.*, Dec 13 p 80
Spray Setup of Polishing Wheels and Buffs*, July 12 p 55
Stabilized Low Voltage Rectifier, Green Electric Co.*, Sept 20 p 84
Steam Cleaning Compound, Turco Products, Inc., Aug 23 p 83
Surface Designation of the American Standards Assn., Sept 27 p 66
Surface Finishes for Functional and Decorative Purposes, Sept 13 p 64
Surface Finishing of Beryllium Copper*, Nov 15 p 60
Surface Treatments of Aluminum and Magnesium Alloys, Sept 20 p 76
Synthetic Resin Finish, New Wrinkle, Inc., Sept 20 p 85
Tests on Iridite Finish for Cadmium and Zinc Plated Steel, July 26 p 61
Throwing Power of Anodizing Baths*, Dec 20 p 51
Tin Undercoats for Painted Steels Improve Corrosion Resistance, Dec 6 p 64
Water Proof Varnish, Dow Corning Corp., Dec 13 p 79

Cleveland Crane & Engineering Co.:
Double Bucket Carrier*, Oct 4 p 86

Cleveland Graphite Bronze Co.:
Earnings, First Half 1945, Aug 16 p 104H; First Nine Months, Dec 20 p 132

Cleveland Tool, Die & Machine Shops Assn.:
Officers Elected, Dec 6 p 172

Climax Engineering Co.:
Electronic Heater*, Nov 15 p 78

Coal:
Alabama's Output Down, July 12 p 112
Decline in Soft Coal Output Halted in May but Stocks Still Low, July 19 p 106
Great Lakes Shipments Upped, Nov 8 p 121
J&L Case Sets Pattern for the Industry, Oct 11 p 99
Losses Through Strikes, Apr. 1-Aug. 2, Aug 9 p 99
Mine Foremen Union Case Decision to Be Handed Down Soon, Nov 1 p 97
New England Faces No Early Shortage, Oct 11 p 99
Northwest Seeks to Develop Coals for Carbon Products, Nov 15 p 162
Pittsburgh Merger Forms Nation's Largest Bituminous Producer, Dec 13 p 154
Research Work for 1944 Covered in Bureau of Mines Annual Report, July 5 p 112
Russia's Production Plans, Dec 20 p 97
Situation Chaotic; Steel Production Slashed to New Low Level, Oct 18 p 98
Supervisors Tie Up Pennsylvania Mines, Sept 27 p 96
TC&I Plans to Open New Mine, Oct 4 p 114
Wartime Statistics on World's Coal and Coke Industry, Oct 18 p 128
Youngstown Rate Reductions Branded "Utterly Inadequate," Oct 25 p 95

Coining:
Coined Grooves for Shaft Journals*, Nov 8 p 81

Coke:
Gary Sheet and Tin to Increase Its Reduction Capacity, Nov 22 p 112
Inventory Controls Dropped, Nov 15 p 105
National Tube Expands Byproduct Coke Works, Oct 4 p 134
Wartime Statistics on World's Coal and Coke Industry, Oct 18 p 128

Colonial Broach Co.:
Hydraulic Press*, Aug 2 p 71; Dec 27 p 63
Presses Facilitate Sleeve Assembly in Blocks*, Aug 30 p 37

Color Code for Bar Stock, by Benjamin Melnitsky*, July 12 p 56

Color Merchandising of Metal Products, by Edward Engel, Dec 6 p 77

Colorado Fuel & Iron Corp.:
Estimates 2 to 20 Months Required for Added Geneva Facilities, July 12 p 89
Formal Bid for Geneva*, Aug 16 p 104H
Merger Plan With Wickwire Spencer Submitted, July 12 p 126
Submits Proposal for Geneva, July 5 p 105

Columbia Metals Corp.:
Interested in Troutdale and Spokane Aluminum Reduction Plants, July 26 p 92

Columbia Steel Casting Co.:
Large Steel Castings in West Coast Plant*, Nov 22 p 61

Columbia Steel Co.:
Foremen Petition to Form Own Union, Nov 22 p 92

Commercial Reflector & Mfg. Co.:
Lucite Fluorescent Units, Aug 23 p 82

Committee for Economic Development:
Calls for Re-employment Aids, Aug 30 p 80
Industry Estimates 1947 Markets, Aug 23 p 58
Reconversion for Detroit Area, Orderly, Aug 9 p 124
Reports on Problem for Increased Employment, Oct 18 p 136
Sees Manpower Problem Basic to Postwar Agriculture, Dec 27 p 130

Commonwealth Edison Co.:
Uncommon Applications of High-Frequency Heating*, Oct 4 p 72

Compar Instrument Co.:
Dual Comparing Microscope*, Sept 6 p 100

Compton, Dr. A. H.:
Atomic Power Plant Seen as Possibility Within Ten Years*, Oct 18 p 171

Comstock, G. F.:
Titanium in Chrome-Manganese Stainless Steel*, Aug 9 p 62

Comstock, Gregory:
German Cemented Carbide Industry*, Aug 30 p 36A

Connecticut Hard Rubber Co.:
Molded Silastic Parts, Sept 13 p 74

Consolidated Steel Corp.:
Absorbs Western Pipe & Steel Co., Oct 4 p 98

Consolidated Vultee Aircraft Corp.:
Fabricating High-Strength Aluminum Alloys*, Dec 27 p 40
A High-Strength Plastic Laminate*, July 12 p 62
New Heat-Treat Neutralizing Chemical*, Oct 4 p 82
Photo-Grid Techniques for Measuring Distortion*, Nov 8 p 78
Resinous-Base Plaster Mold Sealant, Aug 9 p 60
Tests on Iridite Finish for Cadmium and Zinc Plated Steel, July 26 p 61

Construction:
Activity Shows Marked Gains in First Six Months, Aug 2 p 80
Brazil Has Funds for Buying Road Machinery in U.S., Aug 2 p 98
Caterpillar Adds to Its Line, Nov 8 p 88
Controls Relaxed to Permit Additional Reconversion Construction, Aug 30 p 91
Data on Specification for Design of Light Gage Steel Discussed, Nov 1 p 136
Dept. of Commerce Survey Shows Plant Expenditures in 1945, Dec 27 p 94
Estimates for 1946, Dec 13 p 135
Fabricated Structural Steel Bookings and Shipments, June, Aug 2 p 93; July, Aug 30 p 77; August, Oct 11 p 95; September, Nov 1 p 91; October, Dec 6 p 123
Gas and Oil Pipelines to Be Fabricated by Pressure Welding, Oct 4 p 100
Gas Fuel Shut-off Foreshadows Texas-California Pipeline, Dec 27 p 74
Machinery Price Ceiling Raised, Oct 11 p 110
New Earthmover Line, Oct 18 p 86
Official End of War Is Launching Highway Program, Sept 13 p 114
Order Rescinded by OWMR, Sept 27 p 126
Peru Plans $10 Million Expenditure for U.S. Highway Machinery, Dec 27 p 102
Price Controls on Building Materials Charged to OPA, Oct 4 p 152
Projects Totaling 99,638 to Cost 15 Billions After War, July 5 p 111
Reconversion Points Outlined, Aug 2 p 125
Second Bay Bridge Recommended to California Toll Bridge Authority, Nov 1 p 80
South American Engineers to Get Training in U.S. Highway Construction, July 19 p 118
Speeded by Order Amendment, Aug 16 p 105
Steel Awards, Nov 8 p 160; Nov 15 p 178; Nov 22 p 160; Nov 29 p 124; Dec 6 p 123; Dec 13 p 135; Dec 20 p 153; Dec 27 p 97
Steel Fabricators See Close to $1 Billion Business Next Year, Nov 8 p 116
U.S., 1946, Nov 8 p 105
WPB Removes Controls, Oct 11 p 82
WPB Revoked Order to Remove Controls, Nov 8 p 146

Containers:
Advisory Committee Recommends End of CMP for All Steels, July 26 p 105
Army to Buy Container Sheets, July 5 p 104
Boosting Capacity of Storage Tanks*, July 26 p 73
Can Ceiling Set by OPA, Dec 27 p 118
Canning of Ordnance Requires Half Million Tons of Steel, Aluminum*, Aug 16 p 104F
Cargo Bins Used in Pacific War Theater, Nov 22 p 162
CPA Relaxes Tinplate Packing Restrictions, Nov 22 p 123
Corrosion Performance of Blackplate in Cans, Nov 15 p 59
Drum Opening Tool, Merrill Bros.*, Dec 6 p 82
Free-Fall Cargo Containers, Nov 1 p 128
Hidden-Arc Welding of 13-Gage Steel Watertight Boxes*, Nov p 52
Less-Than-Carload Aluminum Container, Reynolds Metal Co., Nov 8 p 117
Less Tin on Food Cans, July 1 p 146
Long-Time Storage of Military Equipment Done by "Canning" Nov 8 p 121
Metal Strapping Group Gets Additional Steel, Aug 23 p 140
Milk Can Tin Quotas Based on Prewar Use, Oct 11 p 136
Moisture-Proof Covering to Protect Navy Matériel*, Nov 29 p 105
Nail Kegs, Oct 25 p 93
Old but Still Good*, Dec 13 p 1
Packaging Exposition Announced by AMA, Dec 6 p 169
Postwar Packaging to Bring Radical Changes in Types and Construction, Sept 27 p 78
Republic Purchases Large Barrel Plant, Oct 4 p 114
Shell Packing Device Saves Money, Gets Award, July 19 p 1
Steel Drum Reclamation, Sept 1 p 97
Steel Strapping Urged for Nylon Shipments, Nov 15 p 119
Tin Can Recovery Urged, Nov 2 p 126
Users of Canned Products Must Adopt Tin Can Salvage, July 1 p 95
WPB Makes Blackplate Ruling on Canning Quotas, July 26 p 90
Welded Air-Tight Steel, for Aircraft Engines*, Oct 11 p 99

Continental Can Co.:
Earnings, 1945, Nov 1 p 100

Continental Machines, Inc.:
DoAll Announces Home Study Course in Gage Training, July 12 p 124
Metric Gage Blocks*, Aug 30 p 5

Continental Motors Corp.:
Aero Engine Delivery Started, Oct 18 p 103
Has 2-yr Order Backlog, Oct p 162
Making Ford Tank Engines, July 26 p 142

Continental Steel Corp.:
Earnings, Third Quarter 1945, Nov 1 p 101

Continuous Gaging With X Ray Micrometer, by R. C. Woods and Frederic Fua*, Nov 29 p 50

Contract Termination:
Cancellation Telegrams Awaited Only Release Order From War Agencies*, Aug 16 p 104A
Cancellations on VJ-Day 100 Pct for Some Military Contracts, Aug 16 p 88
Chicago Ordnance to End Terminations, Nov 15 p 170
Claim Filing Still Delaying Payments, Oct 11 p 109
Claims Now Most Important Task of Contractors, Sept 20 p 152
Contractors Delaying Termination Progress, Nov 1 p 149
Dimock Named Board Head, Oct 11 p 132
Eastern Aircraft Signs Navy's Pretermination, July 12 p 93
Guides for Stop-Work Points Issued for Steel and Other Materials, Aug 16 p 104B
Hinckley Recognizes Severance Pay, Aug 30 p 84
Hinckley Says Terminations Can Balance Cancellations During This Year, July 5 p 106
Hinckley Urges Utmost Haste, Sept 6 p 190
Idle, Excess Material Disposal Regulations in War Cancellations, Sept 20 p 156
Maritime Cancellations Detailed, Aug 23 p 109
Materials Controls Eased by War Dept., Sept 13 p 82
Navy Cancellations on Planes, Weapons, Ships Reach Seven Billions, Aug 23 p 120
Navy Cuts Announced, Aug 23 p 109
Navy Sets New Year's Day as Deadline for Clearing Negotiations, Sept 13 p 84
New Business Offsets Terminations at GE, July 19 p 114
Number of Termination Stocks to Be Removed Show Large Increase, Nov 15 p 164
October Settlement Reached $1.5 Billion, Dec 27 p 136
OPA Acts on Sale of Terminated Left Overs, Dec 13 p 119
Readjustment Chief Urges Early Filing of Claims, Nov 8 p 113
Reconversion Needs Heard by Pressed Metal Institute, July 5 p.137
Settlements in Chicago Area Set Record for November, Dec 27 p 93
T-Loans Not Used for Cancellation Capital, Aug 16 p 130
Terminations Reach $5 Billion, Lead by Air Force and ASF, July 19 p 112
War Dept. Ready to Terminate Contracts Valued at $35 Billion, Aug 23 p 118
WPB Restates Contract Cancellation Policy, July 5 p 86
Westinghouse Ship Propulsion Contracts Slashed $12 Million, Sept 13 p 88

Contractor, G. P., and Vatchagandhy, J. S.:
Segregation in a Rimming-Steel Ingot, Nov 15 p 70

Controlled Materials Plan:
Additional Exceptions on Inventories Announced, July 26 p 113
Allotments Need No Manpower Statement, July 26 p 112
Cancellation Lifts Canadian Purchasing Regulations, Oct 18 p 176A
Class A Products Controls Lifted, Sept 6 p 131
Class B Rule Changed, Aug 2 p 98
Components Cut Frees More Unrated Reconversion Steel, Aug 9 p 103
Container Committee Recommends End of CMP for All Steels, July 26 p 105
Conversion Ruling Revised for Steel, Aug 9 p 106
Direction 48 Amended, July 26 p 143
Direction 70 to Reg. 1 Causes Concern, July 5 p 112
Directive 77 to Reg. 1 Issued, Sept 20 p 94
Expired Sept. 30, Oct 4 p 109
Inventory Limit Cut to 45 Days, July 5 p 104
Limited Priorities Control System Replaces CMP Sept. 30, Aug 30 p 80
ODT Getting Most of Needed Materials Under Final Allocations, Aug 16 p 104D
Replacement of War Allotments for Civilian Items Described, July 19 p 100
Rescheduling by Producer Permitted Within Quarter, Aug 9 p 103
Sequence for Scheduling Unrated Orders, July 12 p 93
Sheet and Strip Controls Free Small Tonnages, Aug 16 p 84
Sheet and Strip Inventory Limits Narrowed by WPB, Aug 16 p 110
Sheet Committee Asks for Freedom From CMP to Speed Production, Aug 9 p 132
Stainless Open Ended; Permit Nickel Plating, July 19 p 101
Stainless Steel Now on Open-ended List, July 26 p 90
Steel Allotments to Forgers Extended, July 26 p 142
Steel Further Conversions Rule Changed, July 19 p 101
Third Quarter Allotments Confirmed, Aug 23 p 116
Thirty Day Lead Time Requires Reopening of July and August Steel Books, July 19 p 106
Unrated or Z Orders Require No Deferment Under New Amendment, July 12 p 92
WPB Will Not Scrap CMP Before Dec. 31, Aug 2 p 78
Z-1 and Z-2 Allotments Canceled on July 1, July 12 p 94

Controllers Institute of America:
Elects New Officers at Local Meetings, Sept 27 p 128

Controlling Quality of Steel Castings, by J. W. Juppenlatz*, July 19 p 50

Conventions:
American Foundrymen's Assn. Holds Administration Congress*, Aug 16 p 134
American Foundrymen's Assn. Plans 1946 Congress, Sept 6 p 121
AIME Electric Furnace Steel Conference, Dec 13 p 75
American Machine Tool Distributors' Assn. Meeting Discusses Surplus Machine Tool Disposal, Nov 29 p 133
AMTDA Outlines Surplus Machine Tool Problem, Nov 29 p 100
American Society for Metals Emphasizes Fatigue Failures of Mechanical Materials*, Nov 22 p 158
ASM Pittsburgh Chapter Holds One Day Technical Session, Nov 15 p 156
American Society of Tool Engineers Exposition to Be Held in Cleveland, Apr 8-12, Nov 22 p 151
Controllers Institute Elects Officers at Local Meetings, Sept 27 p 128
Gray Iron Founders' Society Urge Immediate Withdrawal of Controls on Gray Iron Foundries*, Nov 15 p 172
Machinery Dealers' National Assn. Sees Surplus Program Lasting for Ten Years, Nov 1 p 103
National Machine Tool Builders' Assn. Urges More Goods for More People at Less Cost*, Nov 1 p 102
National Metal Trade Assn. Hears Romney Propose Congressional Action to Aid Employment, Dec 6 p 162
Packaging Exposition Announced by AMA, Dec 6 p 169
Tool Engineers Advise Low Milling Speeds to Chicago Chapter, ASME, July 19 p 132

Convey, J., and Oldfield, J. H.:
Micro-Spectrographic Method for Steel Segregates, Dec 13 p 63

Conveyorized Non-Decarburizing Heat Treatment of Gears, by W. J. Bornholdt and H. E. Scarbrough*, Oct 18 p 54

Cook Electric Co.:
Pressure Detector, Dec 27 p 64

Coolants:
Cutting Fluid and Dispensing Reservoir, Cincinnati Milling Machine Co.*, Dec 6 p 82
Diamond Wheel Coolant, Industrial Abrasives, Inc., Aug 30 p 54
Strainer, Strainer Products Corp.*, Aug 23 p 84

Cooper-Bessemer Corp.:
Russia Orders 24 Compressors for 500 Mile Pipeline, Sept 13 p 100

Co-operatives:
CIO Proposes Workers Run Willow Run Plant on Co-operative Basis, July 12 p 92

Copper:
ASTM Copper and Alloy Standards, Nov 8 p 124
Canada Sees U.S. as Best Customer, Dec 13 p 136
Canadian Imports, Dec 6 p 126
Canadian Producers Optimistic, Oct 11 p 136
Canadian Production, September, Dec 6 p 126
Canadian to Go to U.K., Dec 20 p 116
Consumption and Inventories, First Quarter, Oct 4 p 136; Second Quarter, Nov 22 p 113
Consumption Up, Nov 1 p 108
Deliveries, Chart, June, July 26 p 146
Deliveries, November, Rise, Dec 20 p 116
Demand Heavy, Aug 23 p 146
Free Cutting Copper Rod Machines Easily*, July 26 p 60
Freed, July 26 p 114
French Protest Seizure of Bor Mines, Sept 6 p 178
Heat Treating Beryllium Copper for Peak Performance*, Dec 6 p 58
Import Basis Within Ten Years, Pehrson Warns, Nov 8 p 124
Krug Expects Consumption Postwar to Continue High, Nov 8 p 148
Orders Decline; Exceed Domestic Output, Oct 18 p 112
Premium Plan Said to Stabilize Mart, Oct 11 p 136
Production, August*, Sept 20 p 166
Scrap Prices Decline 2c Per Lb, Aug 23 p 146
Spinning of Copper-Base Alloys*, Aug 30 p 42
Stockpile Dropped at End of November, Dec 27 p 102
Surface Finishing of Beryllium Copper*, Nov 15 p 60
Switch Copper, Revere Copper & Brass, Inc.*, July 12 p 64D

Copperweld Steel Co.:
Leasing of Scrambled Plant Facilities on a Rental Basis Asked For, Nov 15 p 115
Mousing Tool*, Sept 13 p 73

Corbett, R. B., and Williams, A. J.:
Effects of Boron in Steel, Oct 11 p 54

Corbman, M.:
Sillimanite and Magnesite Sleeves and Nozzles, Dec 13 p 75

Cornell, Sidney:
Finishing Spur Gears for Aircraft Engines*, Dec 27 p 46

Corrosion:
Alrok Treatment Avoids Masking Cast-in Inserts, Oct 11 p 69
Aluminum Corrosion by Die Materials*, Sept 20 p 72
Assessing Wear Due to Friction and Corrosion*, Oct 25 p 65
Cathodic Protection Rectifiers, Federal Telephone & Radio Corp.*, Aug 23 p 83
How to Protect Motor and Machine Components*, Oct 18 p 64
Immersion Treatments for Increased Corrosion Resistance, Sept 20 p 79
Marine Tests Rate Alloy Performance*, July 26 p 62
Performance of Blackplate in Cans, Nov 15 p 59
Preservatives (Rust Preventives), Sept 27 p 67
Rust Inhibiting Oil, Mitchell-Bradford Laboratories, Sept 20 p 85
Tin Undercoats for Painted Steels Improves Corrosion Resistance, Dec 6 p 64

Corrosion of Aluminum by Die Materials, by P. A. Haythorne*, Sept 20 p 72

Cosman, T., tr.:
Chromium, Silicon and Aluminum Impregnation of Steel*, Oct 18 p 58
Creep Resistant Alloy Steels*, Aug 2 p 58

Covert, Seward A.:
Induction Heating of Small Parts*, Sept 27 p 60

Cowles Detergent Co.:
Brass Cleaner, Sept 20 p 85

Cramer, Frank W.:
Twin-Motor Drives in Hot Reducing Mills*, Oct 11 p 58

Crane Co.:
Time Allowances for Drill-Press Work*, Sept 20 p 58

Cranes:
Aire-Rectifier-on-Cab, Lintern Corp.*, Oct 4 p 85
Unit for Tractor Mounting*, Oct 4 p 88

Creep Resistant Alloy Steels, tr. by T. Cosman, Aug 2 p 58

Crocker-Wheeler Div.:
Protected Type Motors*, Nov 22 p 80
Vertical Dripproof Motor, Oct 18 p 74

Crosley Corp.:
To Continue Building Cars, July 5 p 132

Crosley Motors, Inc.:
Fabricated Engine Bought, Sept 13 p 86

Cross Co.:
Boring and Facing Machine*, Aug 9 p 77
Grinding and Honing Machine*, Sept 27 p 72
Special Machine*, Nov 29 p 68

Crucible Steel Co. of America:
Licensed to Produce "Cor-ten", Aug 2 p 103

Crump, Harry:
German Cutting-Tool Steel Substitutes Revealed Inferior, Nov 22 p 155

Curtiss-Wright Corp.:
Buffalo Workers Laid Off, Nov 15 p 84
Deserts Biggest War Plant in Buffalo, Sept 27 p 103
Jet Quench Minimizes Aluminum Distortion*, July 5 p 78
Machinery Sale Draws Thousands of Bidders, Nov 22 p 161

Cutler-Hammer, Inc.:
Improved Magnetic Brake*, July 12 p 64C

Cutter Design Evaluated by Production Runs, by A. O. Schmidt*, Nov 22 p 54

Cutting Tools:
(See Tools, Cutting)

Cycle Annealing of Hypo-Eutectoid Steels, by G. R. Brophy*, Dec 13 p 69

Czechoslovakia:
Industry to Be Nationalized, Nov 1 p 99

Steel and Iron Output Rising Slowly, Oct 4 p 115

D

Davis & Thompson Co.:
Continuous Drill*, Sept 27 p 71

Dayton Rogers Mfg. Co.:
Bellows Die Cushion, Dec 27 p 64
Die Cushions*, Dec 27 p 64

Decarburization:
Preventing Surface Decarburization in Large Shaved Transmission Gears*, Nov 29 p 56
(See also Carburization)

De Coriolis, E. G.:
Preventing Surface Decarburization in Large Shaved Transmission Gears*, Nov 29 p 56

Defense Plant Corp.:
Director Husbands Discusses Possibility of Leasing Geneva, July 12 p 74
Status of Metalworking Plants, Oct 4 p 114

Defiance Machine Works, Inc.:
Milling and Drilling Machine*, Aug 9 p 78
Plastic Transfer Molding Press*, Aug 2 p 72

DeGarmo, E. Paul:
Straining of Weld Metal During Cooling*, Dec 20 p 48

Degreasing:
Comparisons of Pickling, Degreasing, Cleaning Procedures, Sept 6 p 75

Delmonte, John:
Form Dies of Resin Impregnated Plaster*, Nov 22 p 72

Denison Engineering Co.:
Bench Press*, Aug 2 p 71

Dept. of Commerce:
Wallace Program Will Revitalize Commerce Business Functions, Sept 27 p 102

Dept. of Labor:
Centralization of Agencies Opens Door for Secretary, Oct 4 p 130

Descaling:
(See Cleaning and Finishing)

Detroit Electrode Holder Mfg. Co.:
Detachable Electrode Holder*, July 19 p 73

Detroit Michigan Stove Co.:
Expands into Heavy Products, Dec 27 p 126

Detroit Tap & Tool Co.:
Thread Milling Cutters*, Sept 6 p 97

Diamond:
Automatic Diamond Dresser, Sheffield Corp.*, Dec 20 p 69
Castweld Setting, Precision Diamond Tool Co., Oct 25 p 70
Controls Relaxed, Sept 20 p 94
Hand Hones, Bay State Abrasive Products Co.*, Oct 25 p 70
Largest Diamond Tool*, Oct 25 p 51
Orders Revoked, Dec 20 p 102
Tools, Selection and Use*, (2 Parts) Aug 30 p 38; Sept 6 p 94

Diamond Tools, by E. L. Murray*, (2 Parts) Aug 30 p 38; Sept 6 p 94

Dickenson, D., and Adams, W. B.:
Corrosion Performance of Blackplate in Cans, Nov 15 p 59

Diecasting:
(See Casting, Die)

Diecasting Close-Fit Threads, by R. E. McIntosh*, Aug 30 p 50

Diecasting Die Design, by H. L. Harvill and P. R. Jordan*, Sept 13 p 48

Dies:
Checking of Diecasting Dies*, Sept 20 p 64
Corrosion of Aluminum by Die Materials*, Sept 20 p 72
Deliveries Increase on Sheet Metal Dies, July 26 p 110
Die Steels for Cold Work*, Nov 22 p 58
Diecasting Die Design*, Sept 13 p 48
Estimating Costs*, Nov 29 p 44
500,000,000 Stampings With Carbide Dies*, Aug 30 p 36
Form Dies of Resin Impregnated Plaster*, Nov 22 p 72
New Method of Producing Embossing Dies*, Oct 4 p 68
Separator, Lyon-Raymond Corp., Dec 27 p 64
Welded Construction Reduces Die Cost*, Oct 4 p 83

Diesel Engine Manufacturers Assn.:
1946 Officers Elected, Dec 27 p 93

Dietert, A. R. L.:
Grating Spectrograph*, Nov 1 p 69

Dietert, Harry W., Co.:
Sand Rammer*, Nov 1 p 69

Dilley Mfg. Co.:
Flexible Safety Device*, Nov 8 p 84

Dimensional Control to Millionths, by T. Y. Moss*, Oct 4 p 79

Dings Magnetic Separator Co.:
Alnico Horseshoe Magnet Locates Casting Flaws, Aug 2 p 47
Magnetic Separator, Sept 13 p 73

Dittmar, Francis:
Precision Founding*, (9 Parts) Try Pattern, July 12 p 46; Glue Mold, July 19 p 62; Preparation of Plaster, July 26 p 70; Plaster-Base Investment Molds, Aug 2 p 51; Master Pattern and Matrix, Aug 9 p 67; Pattern Waxes, Aug 16 p 70; Centrifugal Casting, Aug 23 p 74; Coring Problems, Oct 11 p 62; Vacuum Method, Nov 22 p 68

DoAll Co.:
Wilkie Claims Small Business Must Take Large Part in Reemployment Plan*, Dec 6 p 148

Dodge, F. W., Corp.:
Construction Activity Shows Marked Gains in First Six Months, Aug 2 p 80
Construction Estimates for 1946, Dec 13 p 135
Construction Projects Totaling 99,638 to Cost 15 Billions After War, July 5 p 111

Dodge Mfg. Co.:
Bearings*, July 12 p 64C
Fan and Blower Bearing*, Aug 23 p 84
V-Belt Sheave*, Nov 22 p 81

Dooley, Richard J.:
Magnetic Particle Detection of Retained Austenite and Carbide Segregation*, Oct 25 p 46

Dorcas, Kenneth E., and Simpson, N. H.:
Tests on Iridite Finish for Cadmium and Zinc Plated Steel, July 26 p 61

Douglas Aircraft Co.:
Transfax Simplifies Strain Analysis Studies*, Nov 8 p 81

Douglas Machinery Co.:
Tapping Attachment*, Sept 6 p 98

Dow Chemical Co.:
Emergency Gas Welding of Magnesium Parts, Dec 6 p 65
Extruded Magnesium for Safety Blocks*, Nov 1 p 63
Marine Tests Rate Alloy Performance*, July 26 p 62
New Polystyrene Product, Aug 16 p 136

Dow Corning Corp.:
Water Proof Varnish, Dec 13 p 79

Drawing and Ironing ½-in. Magnesium Plate, by J. W. Gulliksen*, July 5 p 74

Dresser Industries, Inc.:
Earnings, First Nine Months, 1945, Oct 11 p 116

Drilling:
Carbide Tipped Core Drills, Tungsten Carbide Tool Co.*, Oct 25 p 72
Continuous Drill, Davis & Thompson Co.*, Sept 27 p 71
Drill Press Feed, Bellows Co.*, Oct 25 p 72
Drill Press Turret Head, Universal Engineering Co.*, Sept 6 p 97
Drillhead, Thomson Industries, Inc.*, Aug 30 p 54
Heavy Duty Chuck, Jacobs Mfg. Co.*, Oct 25 p 72
Horizontal Machine, Defiance Machine Works, Inc.*, Aug 9 p 78
Hydraulic Feed Machine, Moline Tool Co.*, Sept 27 p 71
Time Allowances for Drill-Press Work*, Sept 20 p 58
Turret Drill Head, Madco Products, Inc.*, Sept 6 p 97
Vertical Drill, LeMaire Tool & Mfg. Co.*, Sept 27 p 70
Vertical Machine, Le Maire Tool & Mfg. Co., Nov 29 p 68

Du-Lite Chemical Corp.:
Phosphate Type Finish, Sept 20 p 85

Duorite Plastic Industries:
Resinous-Base Plaster Mold Sealant, Aug 9 p 60

du Pont de Nemours, E. I., & Co.:
Sodium Hydride Process for Descaling Steel*, Nov 8 p 58

Duro Test Corp.:
Fluorescent Lamp, Dec 6 p 81

E

Early Aluminum Alloys, by K. J. B. Wolf*, Dec 27 p 51

Eash, John T.:
New Bearing Alloy Conserves Tin*, Nov 29 p 64

Eastern Equipment Co.:
Protective Jacket*, July 19 p 74

Ecker, Louis:
Aging and Stretching 24ST Aluminum*, Aug 30 p 36O

Eco Engineering Co.:
Gearless Pump*, Nov 8 p 84

Edge Preparation of Ship Plate, by C. P. Hubert*, Sept 13 p 60

Editorials:
A Blue Shirt in Heaven, Nov 8 p 55
Butter From Coal and Steel From Milk, Sept 6 p 67
The Can and Can't Be Doners, July 19 p 45
Competition and Employment, Aug 9 p 49
Do Dreams Come True? Sept 27 p 47
An Editor Reads the Ads, July 12 p 43
Employment and Employables, Sept 13 p 45
The Four-Horned Dilemma, Dec 6 p 55
Getting Back to Arithmetic, Dec 20 p 45
How to Avoid a Headache, Nov 29 p 41
The Job Changeover, Aug 30 p 31
Labor Trouble in the Barnyard, Nov 1 p 43
Let's Utilize Productivity, Dec 13 p 51
Measurement and Control, Aug 2 p 39
More or Less About More for Less, Oct 4 p 61
Out of the Frying Pan, Dec 27 p 37
Peace—It's Wonderful, Aug 16 p 47
A Policeman Needs No Buzz-Bomb, July 5 p 51
The Quarrelsome Brothers, Nov 22 p 51
The Rabbits Multiply, Sept 20 p 55
Social Security for Employers, Oct 25 p 43
Toward More Jobs and More Freedom, Oct 18 p 47
United We Stand, But—, Oct 11 p 47
Wages and Hours on Steel, Nov 15 p 51
Water and Other Pressures, July 26 p 49
What Does It Cost?—That's the Answer, Aug 23 p 55

Edwards, Junius D., and Keller, F.:
Performance and Structure of Anodic Coatings on Aluminum*, Nov 22 p 75

Effect of Heat Upon Residual Stresses, by La Motte Grover*, Aug 16 p 62

Effect of Work Position in Face Milling, by F. W. Lucht*, (2 Parts) See reprint Jan. 24, 1946 p 64; Dec 13 p 64

Effects of Boron in Steel, by R. B. Corbett and A. J. Williams, Oct 11 p 54

Electric Air Heater Co.:
Electric Unit Heaters, Aug 16 p 76
Portable Air Heaters, Aug 16 p 76

Electric Controller & Mfg. Co.:
Combination Starter*, July 12 p 64D
Lifting Magnet*, Oct 4 p 86
10-Amp Control Relay, Nov 22 p 80

Electric Household Utilities Corp.:
OPA Alleges Illegal Price on Washing Machines, Sept 6 p 164

Electric Industrial Truck Assn.:
Kells Heads Assn.*, Oct 11 p 128

Electric Machinery Mfg. Co.:
Welded Construction Reduces Die Cost*, Oct 4 p 83

Electric Metal Makers Guild, Inc.:
Elects Officers, July 5 p 136

Electric Products Co.:
Truck Battery Charger*, Aug 16 p 76

Electrical Characteristics of Spot Welding Machines, by C. L. Railton and A. J. Hipperson*, Oct 25 p 59

Electrical Equipment:
Appliance Ceiling Raised, Oct 11 p 103
Appliances Outlook for Christmas Only Fair, Oct 4 p 111
Ballasts, General Electric Co., Aug 16 p 78
Carbon Filament Lamps, North American Electric Lamp Co., Sept 20 p 86
Electrical Connectors, Burndy Engineering Co.*, Nov 22 p 82
Fluorescent Lamp, Duro Test Corp., Dec 6 p 81
Fluorescent Lamp, General Electric Co., Dec 6 p 82
Fluorescent Lamp, Sylvania Electric Products, Inc., Aug 23 p 82
Fluorescent Lampholder, General Electric Co., Sept 13 p 72
Foot-Operated Hytool for Installing Hydents, Burndy Engineering Co., Inc.*, Oct 18 p 72
Germany's Industry Great Despite Bombs, Aug 16 p 122
Heaters for Domestic Consumption to Be Made by Westinghouse, Nov 29 p 134
High Frequency Tube, Federal Telephone & Radio Corp.*, Nov 15 p 80
Home Appliance Survey in Chicago, Sept 6 p 128
Home Laundry Survey Shows Expanding Need for Diversified Lines, Sept 27 p 126
Illegal Price on Washing Machines, Sept 6 p 164
Lamp Base Lock, Wabash Appliance Corp.*, Dec 6 p 82
Lucite Fluorescent Units, Commercial Reflector & Mfg. Co., Aug 23 p 82

Rectifier, Federal Telephone & Radio Corp.*, Nov 22 p 81
Rectifiers, Mellaphone Corp.*, Nov 22 p 80
Sealed Rectifiers, Federal Telephone & Radio Corp.*, Oct 18 p 74
Selenium Rectifiers, Radio Receptor Co., Inc.*, Oct 18 p 74
Stationary AC Test Set, General Electric Co.*, Dec 6 p 83
10-Amp Control Relay, Electric Controller & Mfg. Co., Nov 22 p 80
Truck Battery Charger, Electric Products Co.*, Aug 16 p 76
Water Proof Varnish for Insulation, Dow Corning Corp., Dec 13 p 79

Electrodes:
All-Position Mild Steel, Harnischfeger Corp., July 19 p 72
All Position, Westinghouse Electric Corp., July 19 p 72
Alloy, for Welding Jet Propulsion Engines, Arcos Corp.*, July 19 p 73
Arc-Oxygen, Metal & Thermit Corp.*, Oct 11 p 71
Arc Welding, Allis-Chalmers Mfg. Co., July 19 p 72
Arc Welding, General Electric Co., July 19 p 72
Copper Welding, Eutectic Welding Alloys Co.*, Oct 11 p 73
Current-Force Recorder, General Electric Co.*, Oct 11 p 74
Detachable Holder, Detroit Electrode Holder Mfg. Co.*, July 19 p 73
German Steels for Welding Rods, Sept 13 p 54A
Hard Surfacing, Hobart Brothers Co.*, Oct 11 p 72
High Nickel Alloy Welding Rods and Fluxes, Nov 15 p 123
High Temperature, Arcos Corp., July 19 p 73
High Tensile Electrode Developed, Sept 27 p 57
High Tensile, Lincoln Electric Co., Oct 11 p 72
Holder, Allis-Chalmers Mfg. Co., July 19 p 73
Holder, General Electric Co.*, July 19 p 73
Holder, Martin Wells*, July 19 p 74
Holder, Yarco Distributors*, Oct 11 p 71
Mineral-Coated Arc-Welding, Metal & Thermit Corp., Oct 11 p 71
New Rod Permits Machinable Cast Iron Welds*, Nov 15 p 122
New Specifications, July 12 p 82
Shielded Arc, Lincoln Electric Co.*, July 19 p 72
Welding Rod, Alloy Rods Co., July 19 p 73
Welding Rod Specs, Sept 6 p 118
(See also Welding)

Electrolytic Manganese vs. Ferromanganese Addition Agents, by R. T. C. Rasmussen and F. Sillers, Jr., Dec 6 p 80

Electronics:
Air Filters, American Air Filter Co.*, Dec 6 p 84
Geiger-Muller Tube, North American Philips Co.*, Nov 1 p 70
X Ray Micrometer for Continuous Gaging*, Nov 29 p 50

Electroplating:
Effect of Surface Finish on Electroplated Coatings, Sept 13 p 71
Electrodeposition of Metals on Plastics, Dec 13 p 58
Fusion Brightening of Electro-tinplate*, Oct 18 p 57
Physical Characteristics of Electrodeposited Coats, Sept 13 p 68
Physical Control of Plating Baths, Sept 13 p 69
Throwing Power of Anodizing Baths*, Dec 20 p 51
Tin Undercoats for Painted Steels Improve Corrosion Resistance, Dec 6 p 64

Elliott Co.:
Navy's First Gas Turbine Unit Unveiled; 2500 Hp for Ship Propulsion*, Aug 2 p 102

Elwell-Parker Electric Co.:
Skid Box Pallet, Aug 23 p 83
Vat-Dumping Unit*, Oct 4 p 87

Enameling:
(See Cleaning and Finishing)

Engel, Edward:
Color Merchandising of Metal Products, Dec 6 p 77
Metals, Finishes, and Finishing Processes, (4 Parts) Sept 6 p 70; Sept 13 p 64; Sept 20 p 74; Sept 27 p 65

Engines
American Jet Propulsion Progress Unveiled*, Dec 6 p 117
Bearing Oil Spray Reduces Jet Heat, Aug 23 p 140
Bell Aircraft to Make New Gasoline Engine, Oct 18 p 144
Bold Designs Will Power New Entries in Autodom, Oct 18 p 76
British Jet Pass 500-hr Operation Tests, Nov 22 p 96
Canada Puts Duty on Diesels, Oct 11 p 97
Chevrolet Converting Plant to Jet Test Work, July 12 p 98
Continental Making Ford Tank Engines, July 26 p 142
Continental Starts Aero Engine Delivery, Oct 18 p 103
Crosley Buys Fabricated Motor, Sept 13 p 86
Finishing Spur Gears for Aircraft Engines*, Dec 27 p 46
G.M. Reveals Newly Designed Plane Engine, Sept 20 p 158
Locomotive Cylinders Fabricated by Welding*, July 5 p 60
Navy's First Gas Turbine Unit Unveiled: 2500 Hp for Ship Propulsion*, Aug 2 p 102
Presses Facilitate Sleeve Assembly in Blocks*, Aug 30 p 37
Soft-Grit Blasting of Cylinders*, Nov 22 p 65
Storage Center for Aircraft Engines Established, Aug 30 p 92
Thrust Recorder, Hagan Corp*, Nov 22 p 82
Turbosupercharger Production Details*, Sept 6 p 88
Welland Jet*, Nov 15 p 84
Westinghouse Jets Promised Outsiders, July 12 p 98

England:
Almin, Ltd. Formed, Dec 20 p 116
Auto Price Increases Explained, Nov 1 p 99
British EN Alloy Specifications, Nov 15 p 71
British Trade Press Decries Government Intervention Policy, Dec 13 p 115
Coal Exports From U.K., 1939-1944, Oct 18 p 128
Electric Steel Output Grows in War, Nov 22 p 116
Export Auto Sales Urged, Nov 8 p 118
Export Drive Preceding Larger Food Rations; "Invisible" Exports Prime Factor in Readjustment, Nov 29 p 82
Five-Year Plan for Steel Being Disclosed, Dec 20 p 86
Great Britain Turns to Wood in Face of Steel Shortage*, Dec 27 p 91
High Costs Worrying Consumers of All Steel Products, Sept 20 p 117
High Steel Prices Undergoing Some Adjustment, Nov 22 p 117
Hoover Plant Output Approaches Prewar Production Levels, Nov 22 p 118
Hot Strip Mill Planned for Wales, Oct 18 p 109
Housing Delaying Refrigerators for British Kitchens, Nov 8 p 118
Housing Delays Cause Dissatisfaction; Steel Framework Gaining Ready Acceptance, Nov 15 p 94
Iron and Steel Statistics, 1939-44, Nov 22 p 116
Metal Markets Open, July 19 p 146
Plastic Surface Sprayed on Aluminum Sheets in Housing Plan*, Nov 8 p 119
Reconversion Report, Dec 27 p 78
Rescinds Machine Tool Disposal Scheme, Nov 22 p 124
Special War Problems Faced by British Steel Companies, Nov 1 p 145
Steel Capacity Increases Nothing Like That of U.S. During the War, Sept 6 p 106
Steel Costs, Oct 18 p 101
Steel Exporting, Dec 20 p 88
Steel Price Struggle Now Raging, Nov 29 p 98
Steel Supply and Consumption During the War, Nov 22 p 116
Steel War Production (1940-44) Suffered Lack of Rich Foreign Ores, Nov 22 p 116
Tinplate Exports Renewed on Greater Than Prewar Basis, Sept 27 p 101
Tube Investments Group Plans Overall Modernization, Nov 22 p 98
United Steel Companies, Ltd. Outlines Modernization Plans, Dec 20 p 101
Wartime Consumption of Metals, July 26 p 146
Wimpey Constructs Novel Permanent Dwellings, Dec 6 p 121

Entwistle, James L., Co.:
Pneumatic Motor Brake*, Nov 22 p 81

Equipose Controls:
Bimetallic Dial Thermometer*, Dec 6 p 82

Ergolyte Mfg. Co.:
AC Arc Welder, July 19 p 72

Erickson, James L.:
Checking of Diecasting Dies*, Sept 20 p 64

Ermel Industries:
Plastic Coating Compound*, Sept 20 p 85

Espen-Lucas Machine Works:
Circular Blade Grinder*, Nov 29 p 68

Ess Specialty Corp.:
Soldering Stand*, Oct 11 p 72

Estimating Die Costs, by Ralph Howell*, Nov 29 p 44

Etching:
Avoiding "Smut" From Aluminum Etchants, Aug 2 p 57
Metal Etching Procedures, Sept 20 p 78
Solutions for 75S Alloy, Oct 4 p 64

Eutectic Welding Alloys Co.:
Copper Welding Electrode, Oct 11 p 73

Evans Products Co.:
Buys RFC Kelsey Hayes Plant, Sept 20 p 118

Exports and Imports:
Baldwin Locomotive Plans Large Volume of Export Business, Sept 20 p 116
Bethlehem's Foreign Shipments of Steel Products Since War's End, Sept 27 p 93
British Export Drive Preceding Larger Food Rations: "Invisible" Exports Prime Factor in Readjustment, Nov 29 p 82
British Iron and Steel, 1939-44, Nov 22 p 116
British Steel Exporting, Dec 20 p 88
British Tinplate Exports Renewed on Greater Than Prewar Basis, Sept 27 p 101
Canada Faces Heavy Losses of Exports to U.K. Markets, Nov 22 p 119
Canada Puts Duty on Diesel Engines, Oct 11 p 97
Canada to Continue to Import Steel Specialties From U.S., Oct 25 p 98
Canada's Aluminum to Spain, Dec 6 p 126
Canadian Export Trade, October 1945, Shows Decline Compared With 1944, Dec 20 p 101
Colombia Buys Tinplate, From U.S., Nov 22 p 121
Exporters to Brazil Require Authorization, Dec 27 p 92
Import Controls Lifted on Some Ores, Sept 27 p 138
Imports of Tin into U.S., 1942-45, July 19 p 98
India's Iron and Steel Foreign Trade Declines During Wartime Period, Dec 6 p 160
Items Allowed to Be Shipped to France, Sept 20 p 150
More License Changes Issued, Aug 2 p 106
Nickel Imports, 1944, Oct 18 p 112
ODT Export Permits Dropped, Oct 11 p 97
Premiums on Relaying Rails and Used Track Accessories Approved, Aug 16 p 110
Steel Export Allocations Reduced to 850,000 Tons "at the Moment", Dec 20 p 99
Steel Industry Facing Enforced Allocations, Dec 13 p 107
Steel Mill Products Will Continue to Require Export Licenses, Sept 20 p 92
Steel, Percentage, 1935-45, Dec 13 p 107
Telephone Facilities Purchase by Spain Slows Steel Imports, Nov 8 p 118
U.S. Ranked Fifth in Prewar Steel Exports, Aug 16 p 104G
War Exchange Tax Elimination Will Benefit Canadians, Oct 25 p 106
Wire Products and Template Prices Drop in Iberian Peninsula, Sept 20 p 115
(See also Foreign Trade)

F

Fabricating High-Strength Aluminum Alloys, by R. A. Miller and M. E. Tatman*, Dec 27 p 40

Fansteel Metallurgical Corp.:
Hard Facing Metal, Fanweld, July 19 p 73

Farm Equipment:
A. O. Smith Develops Glass Lined Steel Silo; Engine Driven*, Oct 25 p 146
Graham Orders Rototiller Parts, Dec 13 p 172
High Farm Income Creates 1 Yr to 2 Yr Sustained Demand*, Oct 25 p 100
International Harvester Builds Smallest Tractor*, Oct 25 p 101
Labor and Material Troubles Holding Up Implement Boom, Oct 25 p 102
Production Declines, Third Quarter, Dec 6 p 159
Warren City Mfg. Co. Heads Division for Graham, July 12 p 90

Fasteners:
Anchor Nut, Kaynar Mfg. Co.*, Aug 30 p 55
Anchor Type Lock-Nut, Kaynar Mfg. Co.*, Dec 20 p 69
Anodizing Rivets*, Nov 22 p 118
Automotive Bolts*, (2 Parts) Aug 23 p 64; Aug 30 p 47
Blind Bolt Assembly, Victory Mfg. Co.*, Sept 6 p 99
Bolt, Nut and Screw Makers Account for Large Steel Tonnage, Oct 11 p 104
Bolt Simplification Issued, Sept 27 p 134
Lock Nut, F. D. Saylor & Son, Aug 30 p 55
Lockbolt Fastener, Huck Mfg. Co.*, Dec 20 p 71
Procedure for Price Adjustment on Bolts, Nuts, Screws and Rivets Outlined, Nov 22 p 111
Rivet Standards Proposed, Dec 13 p 120
Rivnut, Threaded Tubular Rivet, B. F. Goodrich Co.*, Oct 25 p 71
Russell, Burdsall & Ward Co. Marks 100th Anniversary*, Nov 1 p 103
Speed Clamps, Grand Specialties Co., Sept 6 p 99
Standardization of Shackles*, July 12 p 50
Steel Clip for Box Covers, Tinnerman Products, Inc.*, Oct 25 p 72

Fedders Mfg. Co.:
To Vote on Possible Stock Split, Sept 6 p 131

Federal Products Corp.:
Dial Indicator, Aug 30 p 56

Federal Telephone & Radio Corp.:
Cathodic Protection Rectifiers*, Aug 23 p 83
High Frequency Tube*, Nov 15 p 80
Iron Core Magnetic Components*, Oct 18 p 74
Rectifier*, Nov 22 p 81
Sealed Rectifiers*, Oct 18 p 74

Feild, Alexander L.:
German Stainless Steels, Dec 20 p 60

Ferko, A. J.:
Alrok Treatment Avoids Masking Cast-in Inserts, Oct 11 p 69

Ferroalloys:
Canadian Production, May, July 12 p 134; June, Aug 16 p 149; July, Sept 13 p 100; August, Oct 18 p 104; September and October, Dec 13 p 114
Canadian Production, 1923-45, Dec 13 p 114
New Low-Carbon Ferromanganese, Nov 8 p 124

Ferromanganese:
New Low-Carbon, Nov 8 p 124
Substitution in Stainless Heats, Nov 29 p 101

Finishes:
(See Cleaning and Finishing)

Finishing Spur Gears for Aircraft Engines, by Sidney Cornell*, Dec 27 p 46

Fink, Dr. William L., Nock, J. A., Jr., and Hobbs, M. A.:
Aging of 75S Aluminum Alloy, Nov 1 p 64

Firth-Sterling Steel Co.:
Diecarb for Blanking and Forming Dies*, Aug 30 p 36
Sectional Carbide Molds Facilitate Recutting*, Oct 25 p 50

Fisher Body Div.:
Contracts for New Stamping Plant, Oct 4 p 92
Expands 40 Pct From Prewar Operations, Nov 22 p 111
New Plants in Ohio District Planned, July 26 p 112
Reopens St. Louis Assembly Plant, Aug 16 p 152

Fisk, Phillip M.:
Assessing Wear Due to Friction and Corrosion*, Oct 25 p 65

Fitchburg Grinding Machine Corp.:
Plunge-Cut Grinder, Sept 27 p 71

Flash Welding Alloy-Steel Rings, by P. B. Scharf*, Aug 16 p 50

Flash Welding of Sheet Brass, by T. Watson and A. J. Hipperson*, Sept 13 p 55

Fleischmann, Martin:
German Design Improvisation Described, Aug 16 p 109

Flexrock Co.:
Plastic Gasket Material, Aug 16 p 77

Fluoroscopy:
Of Light-Alloy Castings*, Nov 1 p 54

Fluoroscopy of Light-Alloy Castings, by B. Cassen and D. S. Clark*, Nov 1 p 54

Fluorspar:
Steel Second in Use, Sept 20 p 117

Flux:
Gas Cutting of Stainless Aided by Fluxing System*, Aug 9 p 61
Welding Fluxes for Magnesium, Nov 22 p 71
(See also Brazing; Soldering; Welding)

Fonda Gage Co.:
Gage Blocks*, Dec 20 p 70

Foote Bros. Gear & Machine Corp.:
Linear Power Actuators*, Nov 22 p 81

Ford Motor Co.:
Begins Building 1946 Cars Third Day After Go-ahead*, July 12 p 66
Brazilian Rubber Plant, Dec 6 p 109
Edgewater Plant First to Assemble 1946 Car, Aug 16 p 82
Extend Contract With Foremen's Assn., July 19 p 105
First to Announce 1946 Models, July 5 p 99
Henry Ford II Made President in Administration Turnover*, Oct 4 p 90
Lincoln Autos on Way, Nov 29 p 72
New Type Car to Be Built, Sept 20 p 90
Norfolk Plant Returned to Ford, Aug 16 p 144
Parts Depot at Denver Begun, Oct 4 p 109
Plans Mercury and Lincoln Assembly Line in Raritan, N. J., Oct 18 p 103
Production Halted to Balance Inventories*, Dec 6 p 88
Rebuilding Program in Foundry, Nov 22 p 84
Tractor Production Shifted to Highland Park, Aug 16 p 104D
Turbosupercharger Production Details*, Sept 6 p 88
Waives Option on Willow Run, Sept 27 p 114

Foreign Economic Administration:
Mica Purchases to Cease by Year End, Sept 6 p 178
More License Changes Issued, Aug 2 p 106
Steel Mill Products Continue to Require Export Licenses, Sept 20 p 92
Supplies to Norway Are Increasing, Aug 16 p 86

Foreign Trade:
Buda Co. Organizes for Latin-American Market, July 12 p 128
China as a Potential Postwar Market, Sept 6 p 108
Export Subsidies Program Will Menace American Industries, Sumberg Says, July 5 p 110A
How to Conduct All Trade With Russia, July 26 p 144
Security Rules Hamper India Buying Mission, July 12 p 128
Wallace Program Will Revitalize Commerce Business Functions, Sept 27 p 102
(See also Exports and Imports)

Foremen's Assn. of America:
Extend Contract With Ford, July 19 p 105
Gaining Ground in Steel Organizing Drive, July 12 p 88

Forging:
Brass Assn. Published Forgings Tolerances, Dec 6 p 126
Brass Production, 1935-45, Chart, July 12 p 134
Estimating Die Costs*, Nov 29 p 44
Gilmore Interest in Pacific States Steel Bought by Joseph Eastwood and American Forge Co., Oct 25 p 82
Steel Castings Replace Forgings*, Nov 1 p 50
(See also Nonferrous Metals; Steel, Forming and Shaping)

Form Dies of Resin Impregnated Plaster, by John Delmonte*, Nov 22 p 72

Forming and Bending:
Benders, O'Neil-Irwin Mfg. Co.*, Sept 13 p 74
Compression Roll Forming Bumpers*, Sept 6 p 87
Hydraulic Stretch-Leveling Table, Rufford Machine Works, Inc.*, Aug 2 p 72
Photo-Grid Techniques for Measuring Distortion*, Nov 8 p 78
Transfax Simplifies Strain Analysis Studies*, Nov 8 p 81
Universal Bender for Pipes and Shapes*, Dec 27 p 50

Foundry:
Allison Purchases Aluminum Foundry at Bedford, Ind., Oct 25 p 110
Behavior of Charge Material in the Cupola, Nov 15 p 65
Berlenbach Expansion Announced, Oct 25 p 105
Bonding Action of Clays, Nov 22 p 67
Brazilian Foundry Highly Mechanized for All Castings, Nov 1 p 148
CC Ratings for Iron Foundry Industry Announced by WPB, Nov 15 p 162
Controlling Quality of Steel Castings*, July 19 p 50
E. F. H. Aluminum Co. Burns, Oct 18 p 112
Ford Rebuilding Program Will Increase Volume, Nov 22 p 84
Foundries Need Recruits, Nov 15 p 180
Graphite Molds for Short-Run Castings*, Sept 6 p 83
Immediate Withdrawal of Controls on Gray Iron Foundries Urged, Nov 15 p 172
Labor Shortages Hinder Midwest Output, Sept 20 p 112
Need for Technical Advances Stressed by Kellner, Nov 8 p 134
New Bay Region Sand, Nov 22 p 92
New Pricing Method for Light Metal Castings, July 12 p 134
9.5 Million Tons Castings Expected This Year, Oct 18 p 102
Non-Siliceous Molding Paints and Powders, Oct 18 p 53
Philadelphia Reports on October Operations, Dec 13 p 169
Porosity in Navy G and M Metals and Red Brasses*, Nov 15 p 68
Precision Founding*, (9 Parts) Try Pattern, July 12 p 46; Glue Mold, July 19 p 62; Preparation of Plaster, July 26 p 70; Plaster-Base Investment Molds, Aug 2 p 51; Master Pattern and Matrix, Aug 9 p 67; Pattern Waxes, Aug 16 p 70; Centrifugal Casting, Aug 23 p 74; Coring Problems, Oct 11 p 62; Vacuum Method, Nov 22 p 68
Sand Rammer, Harry W. Dietert Co.*, Nov 1 p 69
Sands and Mold Materials Report No. 2, Dec 13 p 90
Workers Discuss Wage Refusal, Nov 8 p 165
Workers Strike in Chicago Area, July 26 p 113
X Ray Standards for Purchasing Castings*, Nov 22 p 62
(See also Casting)

France:
Five-year Plan for Rehabilitation of Machine Tool Industry, Sept 6 p 176
Ordering Ships at High Level in Foreign Markets, Dec 6 p 98
Protest Seizure of Bor Copper Mines, Sept 6 p 178
Renault Works' Nationalization Is Compromise; Steel Limiting Factor to Output, Dec 13 p 94
Steel Industry Limited by Coal Problem, Dec 6 p 98

Francis, Charles E., Co.:
Hydraulic Press*, Aug 2 p 71

Frankford Arsenal:
Precision-Cast Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64

Franklin McAllister Corp.:
Disintegrator*, Aug 16 p 78

Fray Machine Tool Co.:
Milling Machine*, Sept 27 p 69

French Oil Mill Machinery Co.:
Plastic Molding Press*, Aug 2 p 72

Fruehauf Trailer Co.:
Truck-Trailer Plant to Be Built at Avon, Ohio, Nov 8 p 117

Fua, Frederic, and Woods, R. C.:
Continuous Gaging With X Ray Micrometer*, Nov 29 p 50

Fuel:
Gas Shut-off Foreshadows Texas-California Pipeline, Dec 27 p 74
Nazi Secrets to Be Distributed to U.S. Industry, Nov 15 p 88
Sweden Trying Straw for Fuel, Dec 13 p 96

Furnaces, Blast:
British Furnaces in Blast, 1939-44, Nov 22 p 116
Data for U.S. and Canada, Nov 1 p 91
Edgar Thomson No. 7 Blown Out, Sept 27 p 97
Failures in Rammed Carbon Linings, Aug 2 p 70
Four C-I Furnaces Brought into Blast, Nov 22 p 123
Moving the Pembroke Blast Furnace From Florida to Texas*, Nov 15 p 66
Old Time Merchant Furnace Sold by Struthers, Oct 18 p 126
Pig Iron Production by Districts, June, Aug 9 p 151; July, Sept 6 p 125; August, Oct 11 p 107; September, Nov 1 p 101; October, Dec 6 p 119
Sinters Economize Operation*, Nov 29 p 62
World's Record Made in July, Aug 9 p 99

Furnaces, Electric:
Atmospheres, Oct 25 p 69
Jet Quench Minimizes Aluminum Distortion*, July 5 p 78
Large Steel Castings in West Coast Plant*, Nov 22 p 61
Operators Meet, Dec 13 p 75
Top vs. Machine Charging Basic Arc Electric Furnaces, Dec 13 p 77
Types Used for Pig Iron Production in Sweden, July 5 p 122

Furnaces, Heat Treating:
Batch Furnaces, W. S. Rockwell Co.*, Nov 15 p 79
Bell Type Carburizing Furnace, Surface Combustion Corp.*, Nov 29 p 56
Bench Furnace, Surface Combustion Corp.*, Nov 15 p 79
Conveyorized Non-Decarburizing Heat Treatment of Gears*, Oct 18 p 54
Electric Laboratory Furnace, K. H. Huppert Co.*, Nov 15 p 78
Gas-Heated for Aluminum Alloy Aircraft Parts*, Aug 16 p 102
Permeable Refractories in Furnace Construction*, Aug 23 p 70
Rust Designs New Type for Tie Plates, Splice Bars, Aug 16 p 103
Salt Bath Furnace, Ajax Electric Co., Inc.*, Nov 15 p 79
Salt Bath Furnace, Upton Electric Furnace Div.*, Nov 15 p 80

Furnaces, Industrial:
Pressure Sensitive Control of Furnace Dampers*, July 12 p 61

Furnaces, Melting:
Openhearth Statistics for 1944 Revealed by Research Assn., Nov 22 p 112
Operation of 4-Ton Openhearth*, Aug 2 p 42

G

Gage Control, by W. F. Johnson*, Sept 20 p 68

Gages:
(See Instruments)

Gas Carburizing, by E. S. Kopecki*, (3 Parts) Oct 18 p 50; Oct 25 p 52; Nov 1 p 60

Gay-Lee Co.:
Slitting Saw*, Dec 20 p 71

Gear Manufacture:
Conveyorized Non-Decarburizing Heat Treatment of Gears*, Oct 18 p 54
Finishing Spur Gears for Aircraft Engines*, Dec 27 p 46
Gear Checker, Michigan Tool Co.*, Dec 20 p 72
Internal Shaver, National Broach & Machine Co.*, Nov 29 p 67

Preventing Surface Decarburization in Large Shaved Transmission Gears*, Nov 29 p 56
Sales, May, July 5 p 140; June, Aug 16 p 150; July, Sept 13 p 128; August, Oct 4 p 162; September, Nov 8 p 122; October, Dec 13 p 122
Vertical Grinder, Pratt & Whitney Div.*, Nov 29 p 67

Gelber, Samuel S.:
Static Balancer*, Aug 30 p 56

General Control Co.:
Foot Switch*, Nov 22 p 80

General Electric Co.:
Arc Welding Electrode, July 19 p 72
Auto-Switch Capacitor*, July 12 p 64D
Ballasts, Aug 16 p 78
Buys Plant of American Armament, Dec 27 p 96
Consolidates Marine Divisions, Nov 15 p 109
Current-Force Recorder*, Oct 11 p 74
Electrode Holder*, July 19 p 73
Electromagnet Can Produce X Rays of 100 Million Volts*, Nov 1 p 97
Establishes Marine Warehouses, Aug 30 p 81
Estimates Doubling of Appliance Plant Payrolls, Oct 4 p 113
Fluorescent Lamp, Dec 6 p 82
Fluorescent Lampholder, Sept 13 p 72
Heating Likely to Be First Application of Atomic Energy, Sept 20 p 148
Hoist Drive, Oct 4 p 86
Million Volt Betraton Opens Possibilities in X Ray Penetration, Nov 22 p 153
Multiple Height Gage for Repetitive Layout*, July 26 p 81
New Business Has Offset Contract Terminations, July 19 p 114
Order Backlog Decreases 14 Pct, Aug 2 p 76
Portable AC Test Set, Oct 18 p 72
Portable Current Transformers*, Nov 22 p 82
Portable Test Sets, Nov 22 p 79
Shock Absorbing Lamps*, Sept 13 p 72
600 Hp Locomotive*, Aug 16 p 76
Stationary AC Test Set*, Dec 6 p 83

General Motors Corp.:
Allison Div. Purchases Bedford Aluminum Foundry, Oct 25 p 110
Auto Union Plans Strike in All Plants as Step in 30 Pct Pay Raise Campaign, Sept 20 p 88
Cutbacks Reduce Backlogs at Second Quarter, Aug 9 p 82
Diesel Div. Is Standby, Oct 4 p 115
Drops Regina, Canada, Plant, Dec 13 p 84
Expands in Cleveland, July 26 p 86
Major Strike Imminent, Nov 15 p 82
Prime Issue of Strike Is Not Wages But Union's Voice in Setting Prices*, Nov 29 p 70
Research Center Planned*, July 26 p 84
Reveals Newly Designed Plane Engine, Sept 20 p 158
Schedules Lag, Nov 22 p 86
Seeks to Modify Veterans' Seniority, Aug 2 p 76
Starts 2-Door Pontiacs, Oct 18 p 78
Strike Situation Rapidly Hardening Into an Impasse*, Dec 6 p 86
Strike Vote Date Set, Sept 27 p 97
Truck & Coach Div. Erects New Plants to Double Prewar Output, Oct 25 p 104

General Tool & Die Co.:
Cushioned High-Cobalt Shaper Tools, Nov 29 p 61

Geneva Steel Co.:
Biddle Aims Heavy Blow at Steel Corp.'s Hopes of Purchase, July 5 p 102
CF&I Estimates 2 to 20 Months Required for Added Facilities, July 12 p 89
CF&I Makes New Offer, Sept 20 p 110
CF&I Rushing Formal Bid After U.S. Steel Withdrawal*, Aug 16 p 104H
CF&I Submits Proposal for Postwar Production, July 5 p 105
Differing Views Enliven Disposal Hearing, Nov 15 p 116
Heller of SPB Urges West to Buy Geneva With Kaiser as Production Manager, July 19 p 84
Kaiser Proposes Syndicate to Lease Far Western Steel Plants, July 19 p 99
Leasing Possibility Discussed by DPC Director Husbands, July 12 p 74
McKee Co. Analyzes Geneva Steel Markets for RFC*, Nov 15 p 112
Plant May Close Down Soon, Disposal Plans Uncertain, Sept 20 p 110
RFC Puts Plant on Block With Sealed Bids Due Mar. 1, Dec 20 p 109
Sealed Bids Imminent, Dec 13 p 90
Shuts Down, Oct 18 p 84
Steel Committee Calls for Competitive Sealed Bids as Washington Hearings Open, Nov 8 p 94
SPA Leaves Door Open for Plant Disposal, Oct 18 p 106
Symington Tells Committee U.S. Steel Logical Operator, Nov 8 p 109
U.S. Steel Invited to Bid, Sept 20 p 98

George, William B.:
Porosity in Navy G and M Metals and Red Brasses*, Nov 15 p 68

German Cemented Carbide Industry, by Gregory Comstock*, Aug 30 p 36A

German Stainless Steels, by A. L. Feild, Dec 20 p 60

German Steel Industry, by T. W. Lippert*, Dec 20 p 54

German Tool and Special Steels, by J. P. Gill, Sept 13 p 54A

Germany:
Allied Bombings of Steel Plants Not Decisive, Survey Shows, Nov 22 p 148
Antiaircraft Rocket Weapons Developed*, Nov 15 p 111
Carnegie Officials to Head Steel Units, July 12 p 92
Cemented Carbide Industry*, Aug 30 p 36A
Chemical Aid Given by France and Belgium, Nov 22 p 152
Cutting-Tool Steel Substitutes Revealed Inferior, Nov 22 p 155
Design Improvisation Described by Timken Metallurgist, Martin Fleischmann, Aug 16 p 109
Electrical Equipment Industry Great Despite Bombs, Aug 16 p 122
Engineers' Report Details Five-Point Program for Control*, Oct 11 p 122
Lack of Super Alloy Steels Handicapped Jet Program, Dec 6 p 118
Lacked A-Bomb Organization, Oct 4 p 142
Nazi Fuel Secrets to Be Distributed to U.S. Industry, Nov 15 p 88
Plants Already Marked for Reparations, Nov 8 p 112
Ruhr Bomb Damage Will Delay European Reconstruction by Months*, July 5 p 110B
Ruhr Steel Mills Fall Into British Occupation Zone*, Aug 9 p 107
Stainless Steels, Dec 20 p 60
Steel Industry*, Dec 20 p 54
Steel Industry Urged to Be Used for Reconversion, Dec 13 p 108
Tool and Special Steels: Analyses, Sept 13 p 54A

Gerrard Steel Strapping Co.:
Cargo Bombs Used in Pacific War Theater Revealed, Nov 22 p 162
Develops Free-Fall Cargo Containers, Nov 1 p 128

Gill, James P.:
German Tool and Special Steels, Sept 13 p 54A

Gilmore, Maurice E.:
Railroad to Solve Economic Problems in South America, July 26 p 116

Globe Products Mfg. Co.:
Miller Lathe Attachment*, Aug 30 p 54

Globe Tool & Engineering Co.:
Balancer, Aug 16 p 78

Gobeille, W. P., and Hufschmidt, W. J.:
Spinning of Copper-Base Alloys*, Aug 30 p 42

Gonser, H. S., and Vance, E. R.:
Rapid Spot Test for Nickel in Steel, Sept 13 p 54O

Goodrich, B. F., Co.:
Open End V Belts, July 12 p 64C
Synthetic Rubber Adhesives, Aug 16 p 77
Threaded Tubular Rivet*, Oct 25 p 71

Goodrich, B. F., Chemical Co.:
Construction Contract Awarded for Plant, Sept 6 p 138
Kriston, Newest Thermoset Plastic, Sept 13 p 144

Goodyear Tire & Rubber Co.:
Dolomite Charging Belts, Oct 4 p 88
Pliobond, All-Purpose Synthetic Adhesive*, Oct 11 p 70
Reinforced Fabric Belts, Nov 22 p 82

Graham-Paige Motors Corp.:
"Insulating" Welding Gloves*, July 5 p 77
Joins With Kaiser to Build Two New Lines of Cars, Aug 2 p 74
Wants Warren City Mfg. Co., Oct 4 p 92
Warren City Mfg. Co. Heads Farm Equipment, July 12 p 90

Grand Specialties Co.:
Speed Clamps, Sept 6 p 99

Granite City Steel Co.:
Dividend Not Paid, Dec 27 p 136

Grant, J. W.:
Vanadium in Cast Iron, Dec 13 p 78

Graphite Molds for Short-Run Castings, by John Putchinski*, Sept 6 p 83

Gray Iron Founders' Society:
Immediate Withdrawal of Controls on Gray Iron Foundries Urged*, Nov 15 p 172

Gray-Mills Co.:
Parts Cleaning System*, Sept 20 p 84

Great Lakes Broach & Gage Co.:
Broach Sharpener, Aug 9 p 78

Great Lakes Steel Corp.:
Plans Quonset Hut Sales to Civilians, Oct 4 p 115

Green Electric Co.:
Stabilized Low Voltage Rectifier*, Sept 20 p 84

Grinding:
Angle Dresser, Nicholas-Morris Corp.*, Dec 20 p 70
Attrition Grinder to Replace Ball Mill, Dec 6 p 94
Automatic Diamond Dresser, Sheffield Corp.*, Dec 20 p 69
Carbide Tool Grinder, E. F. Hager & Son*, Sept 27 p 71
Circular Blade, Espen-Lucas Machine Works*, Nov 29 p 68
Contour Grinder, Thompson Grinder Co.*, Sept 27 p 70
Crush Dressing Device, Sheffield Corp., Sept 27 p 69
Dimensional Control to Millionths*, Oct 4 p 79
Finishing Spur Gears for Aircraft Engines*, Dec 27 p 46
Grinding and Honing Machine, Cross Co.*, Sept 27 p 72
Largest Diamond Tool*, Oct 25 p 51
Plunge-Cut Grinder, Fitchburg Grinding Machine Corp., Sept 27 p 71
Tap, Edward Blake Co.*, Nov 29 p 67
Tool Grinder, Landis Tool Co.*, Aug 9 p 77
Vertical Gear Grinder, Pratt & Whitney Div.*, Nov 29 p 67
Wheel Dresser, Madco Products, Inc.*, Dec 20 p 71
(See also Machining)

Grover, La Motte:
Effect of Heat Upon Residual Stresses*, Aug 16 p 62

Gulliksen, J. Walter:
Drawing and Ironing ½-in. Magnesium Plate*, July 5 p 74

Gumm, Frederick, Co.:
Determining Surface Resistance of Aluminum for Welding*, Aug 16 p 74

Gunnison Homes, Inc.:
Million Dollar Plant to Produce Prefabricated Homes*, Oct 25 p 98

H

Hafsten, Lt. R. J.:
Metallurgy of SAE 52100 Ball Bearing Steel*, July 5 p 54

Hagan Corp.:
Plan to Back Workers in Obtaining Degrees*, Nov 22 p 146
Thrust Recorder*, Nov 22 p 82

Hager, E. F., & Son:
Carbide Tool Grinder*, Sept 27 p 71

Hall, Gordon L., Co.:
Bench Bins*, Nov 8 p 83

Hanchett Mfg. Co.:
Magnetic Chuck*, Dec 20 p 72

Hanna Engineering Works:
Hydraulic Cylinder Calculator, Dec 27 p 63

Hanna, M. A., Co.:
Earnings, First Six Months, July 26 p 112; Third Quarter, Nov 15 p 168

Hardening:
An Appraisal of Subzero Hardening of High Speed Steel*, (2 Parts) July 26 p 54; Aug 2 p 64
Induction Hardening, Sept 27 p 62
(See also Furnaces; Nonferrous Metals; Steel)

Hardinge Bros., Inc.:
Precision Lathe*, Nov 29 p 66
Navy Disposal of Aircraft Aluminum Scrap to Produce 15 Million Lb of Secondary Metal*, Dec 20 p 104

Hardy, Eugene J.:
Canning of Ordnance Required Half Million Tons of Steel, Aluminum*, Aug 16 p 104F
Surplus Witnesses Conflict on Desirability of Central Inventory, Aug 9 p 110

Harnischfeger Corp.:
All-Position Mild Steel Electrode, July 19 p 72
Square Frame Welder*, Oct 11 p 73

Harvill, H. L., and Jordan, P. R.:
Diecasting Die Design*, Sept 13 p 48

Harvill, H. L., Mfg. Co.:
Diecasting Machine*, Dec 27 pp 62, 64

Haythorne, P. A.:
Corrosion of Aluminum by Die Materials*, Sept 20 p 72

Heat Treating:
Alloy Fans, Michiana Products Corp.*, Nov 17 p 79
Beryllium Copper for Peak Performance*, Dec 6 p 58
Brazing of Heat-Treated Parts*, Aug 16 p 54
Conveyorized Non-Decarburizing Heat Treatment of Gears*, Oct 18 p 54
Dewpoint Recorder, Surface Combustion*, Nov 15 p 78
Effect of Heat Upon Residual Stresses*, Aug 16 p 62
Electronic Heater, Climax Engineering Co.*, Nov 15 p 78
High-Frequency Heating, Uncommon Applications*, Oct 4 p 72
High Frequency Tube, Federal Telephone & Radio Corp.*, Nov 15 p 80
Influence of Heat Treatment on Damping Capacity, Aug 16 p 69
Jet Quench Minimizes Aluminum Distortion*, July 5 p 78
Neutralizing Chemical for Aluminum Alloys*, Oct 4 p 82
Preventing Surface Decarburization in Large Shaved Transmission Gears*, Nov 29 p 56
Sub-Critical Annealing*, Aug 9 p 52
(See also Furnaces; Nonferrous Metals; Steel)

Heat Treating Beryllium Copper for Peak Performance, by H. G. Williams*, Dec 6 p 58

Heat Treating, Forming and Welding 75S Alclad, by Mitchell Raskin*, (2 Parts) Dec 6 p 66; Dec 13 p 67

Hecker, A. W., Co.:
To Produce Pumps and Textile Machinery, Oct 18 p 103

Heckethorn Mfg. & Supply Co.:
Air Blow Gun, Nov 8 p 82

Hedges, Dr. Ernest S., and Jordan, Dr. L. A.:
Tin Undercoats for Painted Steels Improves Corrosion Resistance, Dec 6 p 64

Hercules Sling Co.:
Safe-T-Lift Slings*, Oct 4 p 87

Herwig, Robert S., and Leigh, Albert:
Throwing Power of Anodizing Baths*, Dec 20 p 51

Hidden-Arc Welding of 13-Gage Steel, by H. E. Cable*, Nov 1 p 52

Higgins Industries, Inc.:
Negotiating for Southern California and Puget Sound Plant Sites, Aug 9 p 88

Hight, Jack R.:
Steel Price Struggle Now Raging in England, Nov 29 p 98

Himmelright, Carl:
Broaching Hardened Involute Splines*, Aug 30 p 36P
Production Work on Jig Borers*, Aug 23 p 72

Hipperson, A. J., and Railton, C. L.:
Electrical Characteristics of Spot Welding Machines*, Oct 25 p 59

Hipperson, A. J., and Watson, T.:
Flash Welding of Sheet Brass*, Sept 13 p 55

Hjermstad, H. U.:
Induction Brazing and Soldering*, Aug 9 p 56

Hobart Brothers Co.:
Arc Welder*, Oct 11 p 72
Hard Surfacing Electrode, Oct 11 p 72
Welding Attachment, Oct 11 p 73

Hobbs, M. A., Fink, Dr. W. L., and Nock, J. A., Jr.:
Aging of 75S Aluminum Alloy, Nov 1 p 64

Hodgson, C. C., Waring, H. O., and West, W.:
Quality Control of High-Tensile Steel Castings*, Nov 29 p 52

Hood Refining Co.:
Diesel Fuel Oil Additive, Aug 16 p 77

Hoover, Ltd.:
Plant Output Approaches Prewar Production Levels, Nov 22 p 118

Horger, Dr. O. J.:
Fatigue Failures of Mechanical Materials*, Nov 22 p 158

Horn, A. C., Co.:
Protective Roof Coating, Aug 23 p 83

Hot Forming Magnesium Alloy Sheet, by J. B. West*, Aug 16 p 56

Householder, L. E., Logsdon, H. N., and Zeigler, P. P.:
Aluminum—Alloy R303*, Oct 4 p 74

Housing:
Aluminum House Exhibited in England, Sept 13 p 130
British Emergency Shelter*, Nov 29 p 82
British Orders Halted, Sept 20 p 107
Builders' Hardware Prices Upped, Nov 22 p 159
Construction Controls Lifted, Sept 20 p 110
Construction Order Rescinded by OWMR, Sept 27 p 126
Controls on All Construction Removed, Oct 18 p 82
Delays Cause British Dissatisfaction; Steel Framework Gaining Ready Acceptance, Nov 15 p 94
Gunnison to Build Million Dollar Plant to Produce Prefabricated Homes*, Oct 25 p 98
Hercules Workers Form Co-op to Combat Home Shortage, Nov 22 p 123
Ingersoll Steel Plans Mass Production of Prefabricated Home Utilities, Nov 1 p 104
New Housing Ceilings Have Been Eliminated, Oct 11 p 116
Permanent Prefabricated House*, July 26 p 105
Plastic Surface Sprayed on Aluminum Sheets in British Housing Plan*, Nov 8 p 119
Prefabricated Aluminum House*, July 5 p 111
Quonset Hut Sales to Civilians, Oct 4 p 115
What! No Federal Help, Dec 20 p 139
Wimpey Constructs Novel Permanent Dwellings*, Dec 6 p 121

How to Protect Motor and Machine Components, by Capt. L. G. Klinker*, Oct 18 p 64

Howe, E. E.:
Sub-Critical Annealing*, Aug 9 p 52

Howell, Ralph:
Estimating Die Costs*, Nov 29 p 44

Hradecky, R., and Seelig, R. P.:
Powder Metallurgy Precision Parts*, Sept 27 p 50

Hubert, Cyril Provo:
Edge Preparation of Ship Plate*, Sept 13 p 60
Magnetic Holddown Chucks Facilitate Plate Welding*, July 19 p 68
No Shipbuilding Utopia, Nov 15 p 102

Huck Mfg. Co.:
Lockbolt Fastener*, Dec 20 p 71

Hufschmidt, W. J., and Gobeille, W. P.:
Spinning of Copper-Base Alloys*, Aug 30 p 42

Huppert, K. H., Co.:
Electric Laboratory Furnace*, Nov 15 p 78

Hydraulic Machinery, Inc.:
Broaching Machine*, Sept 27 p 70
Establishes Sharing Plan, Dec 27 p 114

Hydrocarbon Research, Inc.:
New Low Temperature Steel for Gas Plant, Nov 15 p 119

Hyster Co.:
Crane Unit*, Oct 4 p 88

I

Ihrigizing:
Chromium, Silicon and Aluminum Impregnation of Steel*, Oct 18 p 58

Illinois Precise Casting Co.:
Precision Casting With Plastic Patterns*, Nov 15 p 54

Imports:
(See Exports and Imports)

India:
Iron and Steel Foreign Trade Declines During Wartime Period, Dec 6 p 160
Pig Iron Price Higher Than Prewar, Dec 13 p 140

Indium:
Drops to $3 Oz, July 5 p 142
Price Drops; Low Melting Alloy Use, Sept 20 p 166

Induction Brazing and Soldering, by H. U. Hjermstad*, Aug 9 p 56

Induction Heating Corp.:
Master Induction Coil*, Nov 15 p 79

Induction Heating, Melting:
Heating of Small Parts*, Sept 27 p 60
Induction Brazing and Soldering*, Aug 9 p 56
Induction Heater, Ajax Electrothermic Corp.*, Nov 15 p 80
Master Induction Coil, Induction Heating Corp.*, Nov 15 p 79
60-Cycle Induction Heater for Shrink Fits*, Dec 6 p 76
Uncommon Applications of High-Frequency Heating*, Oct 4 p 72

Induction Heating of Small Parts, by S. A. Covert*, Sept 27 p 60

Industrial Abrasives, Inc.:
Diamond Wheel Coolant, Aug 30 p 54
Dressing Tool, Aug 30 p 54

Industrial Gloves Co.:
Finger Guard*, Dec 6 p 84
Wire Strapper Glove, Aug 16 p 78

Industrial Products Co.:
Dust and Spray Hood*, Nov 8 p 84
Welding Shield Cover Glasses, July 19 p 74

Industrial Trucks:
(See Materials Handling)

Industrial Washing Machine Corp.:
Portable Washing Machine*, Sept 13 p 74

Industry:
Attorney General Promises End to All Witch Hunts, Nov 22 p 113
Broad Peacetime Economy Program Mapped by President, Sept 13 p 104
Chicago Accounts for 7.2 Pct of Nation's Manufacturing Assets, Oct 4 p 160
Chicago Area Output Trebled, Sept 6 p 140
Choosing the Consulting Engineer, July 5 p 72
December Production to Hit 112 Pct, Sept 6 p 123
Estimates 1947 Markets, Aug 23 p 58
Ideas on the "Lost Art" of Small-Lot Production*, Sept 27 p 108
Plowman Charges Freight Rate Rises Cause Unsound Industrial Dispersal, Oct 18 p 105
Rosenthal Urges Management Aid for Prosperous Growth of Smaller Business, Oct 25 p 149
Senate Begins Hearings on Reconstitution of Industrial Centralization Committee, Oct 18 p 80
250 Firms Own 60 Pct of Productive Assets, July 26 p 111
Value of Manufactures, 1929-44, 1947, Aug 23 p 60
West Coast Decline Leveling Off With Gain of Over 850,000 Workers, Sept 27 p 82

Infra-Red:
(See Ovens)

Ingalls Shipbuilding Corp.:
To Make Locomotives, July 5 p 99
Will Build 14 Cargo Ships, Aug 16 p 130

Ingersoll Steel & Disc Div.:
Mass Production of Prefabricated Home Utilities Planned, Nov 1 p 104

Inland Steel Co.:
Ledloy Extras Increased, Oct 18 p 97
Wildcat Strike Halts Operations, Aug 16 p 103

Inspection:
(See Testing and Inspection)

Institute of Scrap Iron & Steel:
Chapter Officers Elected, Nov 15 p 185; Dec 13 p 162; Dec 27 p 104
Vice-President Wolf Cited for Civilian Service, Dec 27 p 138
Weinstein Elected President, Oct 4 p 117

Institution of Metallurgists:
Group Inaugurated, Dec 13 p 96

Instruments, Laboratory:
Deflectometer for Plastics, Baldwin Locomotive Works*, Nov 1 p 68
Dual Comparing Microscope, Compar Instrument Co.*, Sept 6 p 100
Electrical Micrometer, Battelle Memorial Institute*, Sept 6 p 100
Electronic Recorder, Brown Instrument Co.*, Nov 1 p 68
Electronic Titrometer, Precision Scientific Co.*, Nov 1 p 70
Geiger-Muller Tube, North American Philips Co., Inc.*, Nov 1 p 70
Grating Spectrograph, A. R. L. Dietert*, Nov 1 p 69
Handles and Parts, Brown Instrument Co.*, Nov 1 p 68
Interferograph Developed by Standards Bureau, Oct 18 p 63
Recording Galvanometer, Brush Development Co.*, Nov 1 p 69
Sand Rammer, Harry W. Dietert Co.*, Nov 1 p 69
Spectroscopes: Improved Excitation of Arc Spectra, Oct 4 p 78

Instruments, Process Control:
Electronic Gaging Instrument, Autotron Co., Sept 6 p 100
Gas Analyzer and Recorder, Bailey Meter Co., Nov 1 p 70
Spectroscopic Control of Tropenas Converter, Nov 15 p 63
Zinc Coating for Illuminator Plate, Bausch & Lomb Optical Co.*, Sept 13 p 72

Instruments, Shop:
Bimetallic Dial Thermometer, Equipose Controls*, Dec 6 p 82
Chromium Plated Gages, Metro Tool & Gage Co.*, Aug 30 p 55
Dial Indicator, Federal Products Corp., Aug 30 p 56
Dimensional Control to Millionths*, Oct 4 p 79
Electrolimit Comparator, Pratt & Whitney Div.*, Dec 20 p 70
Electronic Gaging Device Developed at Timken for Blind, Aug 16 p 116
Gage Blocks, Fonda Gage Co.*, Dec 20 p 70
Gage Control*, Sept 20 p 68
Handy Gaging Tool*, Nov 29 p 48
High-Speed Counter, Potter Instrument Co.*, Dec 20 p 70
Improved Measuring Projector, Bausch & Lomb Optical Co.*, Aug 30 p 55

Improved Plug Gage Offers Many Advantages*, Sept 13 p 54
Measuring Instrument, Sheffield Corp., Dec 20 p 72
Metric Gage Blocks, Continental Machines, Inc.*, Aug 30 p 55
Multiple Height Gage for Repetitive Layout*, July 26 p 81
Penetron for Measuring Wall Thickness by Gamma Rays*, Aug 30 p 36N
Pocket Size Surface Finish Standards, University Machine Co.*, Dec 20 p 70
Protective Coating for Gages, Janson Gage Co.*, Aug 30 p 56
Rough Finish Measuring Head, Brush Development Co.*, Aug 30 p 55
Running-Time Recorder, Bristol Co.*, Aug 30 p 56
Sheffield Corp. Presents Early Model Instruments to Smithsonian Institute*, Aug 2 pp 106, 128
Static Balancer, Samuel S. Gelber*, Aug 30 p 56
Thread Plug Gages, Master Gage Co., Dec 20 p 72
X Ray Micrometer for Continuous Gaging*, Nov 29 p 50
(See also Testing and Inspection)

International Detrola Corp.:
Disposes of Machine Tool Rights, Dec 27 p 100

International Harvester Co.:
Expansion Program, Dec 20 p 156
High Employment Level to Continue, Sept 13 p 112
Merit Increase Plan Ordered by Regional WLB, July 26 p 141
Plans Large Postwar Improvement, Dec 6 p 140
To Build Farm Machinery Plant in Monterrey, July 12 p 126

International Nickel Co.:
Adds to D&R Field Representatives, Nov 15 p 126
Asks $100,000 for Strike Damages, Dec 6 p 126
Cycle Annealing of Hypo-Eutectoid Steels*, Dec 13 p 69
Marine Tests Rate Alloy Performance*, July 26 p 62
New Bearing Alloy Conserves Tin*, Nov 29 p 64
New Rod Permits Machinable Cast Iron Welds*, Nov 15 p 122

International Plastics, Ltd.:
Plastic Surface Sprayed on Aluminum Sheets in British Housing Plan*, Nov 8 p 119

Interstate Commerce Commission:
Rules Railroads Hold Freight Rates Over Water Traffic, Dec 27 p 76
Youngstown Coal Rate Reductions Branded "Utterly Inadequate," Oct 25 p 95

Interstate Machinery Co., Inc.:
Midget Spot Welder*, Oct 11 p 73

Iridite:
Protective Finish, Rheem Research Products, Inc., Sept 20 p 85
Tests on Iridite Finish for Cadmium and Zinc Plated Steel, July 26 p 61

Iron, Metallurgy:
Effect of Production on the Properties of Iron Powder Compacts, Aug 16 p 55
Formation and Structure of Iron Oxide Films, July 19 p 65
Microscopy of Lead-Bearing Steels and Irons, July 12 p 49
New Heat-Resisting Iron*, Aug 16 p 75
Vanadium in Cast Iron, Dec 13 p 78

Iron, Production:
Brazil's Pig Iron, 1945, Oct 4 p 115
Canadian Pig Iron, August, Oct 18 p 104
Pig Iron by Districts, June, Aug 9 p 151; July, Sept 6 p 125; August, Oct 11 p 107; September, Nov 1 p 101; October, Dec 6 p 119
Sinters Economize Blast Furnace Operation*, Nov 29 p 62

Iron Ore:
(See Ore, Ferrous)

Island Equipment Corp.:
Conveyor Drive, Oct 4 p 85

Italy:
German Requisitions Reduced Steel Output, Sept 13 p 142

J

Jack & Heintz, Inc.:
Enters Automobile Industry, Nov 1 p 74
To Reduce Payroll by 25 Pct, July 26 p 107

Jacobs, F. L., Co.:
Plans New Spring Plant, July 5 p 109

Jacobs Mfg. Co.:
Drill Chuck*, Oct 25 p 72

Jaeger Machine Co.:
Air Compressor, Aug 16 p 76

Jameson, A. S.:
Automotive Bolts*, (2 Parts) Aug 23 p 64; Aug 30 p 47

Janson Gage Co.:
Protective Coating for Gaging Surfaces*, Aug 30 p 56

Japan Co.:
Roller Coating, Dec 13 p 79

Jazwinski, S. T.:
Spectroscopic Control of Tropenas Converter, Nov 15 p 63

Jefferson Electric Co.:
Junction Box*, Nov 8 p 82

Jo Mfg. Co.:
Torque Wrenches*, Oct 25 p 70; Dec 20 p 68

Johnson Steel & Wire Co., Inc.:
Alloy Finish for Wire, Dec 13 p 79

Johnson, W. F.:
Gage Control*, Sept 20 p 68

Joints:
Twin-Arc System Improves Welding Efficiency*, Sept 27 p 58

Jones & Laughlin Steel Corp.:
Earnings, Second Quarter, Aug 2 p 97; Third Quarter, Nov 1 p 101
Expands Its Tinplate Facilities, Aug 2 p 103
Mine Foremen Union Case Decision to Be Handed Down Soon, Nov 1 p 97
Operation of 4-Ton Openhearth*, Aug 2 p 42
Sets Pattern for Coal Industry, Oct 11 p 99
Shuts Down No. 4 Seamless Mill at Aliquippa Works, Nov 15 p 123
Strikes Affect Operations, Sept 27 p 97

Jordan, Dr. L. A., and Hedges, Dr. E. S.:
Tin Undercoats for Painted Steels Improves Corrosion Resistance, Dec 6 p 64

Jordan, Paul R., and Harvill, H. L.:
Diecasting Die Design*, Sept 13 p 48

Joyce-Cridland Co.:
Movable Ramp*, Oct 4 p 88

Juppenlatz, John W.:
Controlling Quality of Steel Castings*, July 19 p 50

K

Kaiser Co., Inc.:
Buys Iron Ore Property, Aug 2 p 84
Cyrus Eaton Says Fontana Can't Operate Economically on War Cost Basis, Nov 1 p 80
Gets New Loan on Fontana, Nov 8 p 94
McKee Report Emphasizes High Cost and Narrow Markets, Nov 22 p 94
Post-conversion Schedule, Nov 15 p 112
Postwar Fontana Operation Depends on Lower Cost, Nov 29 p 102
RFC Loan Adjustment Forces Operation at Prewar Price Structure, Aug 30 p 66
Refinancing Plan for Fontana Sets Value at 58 Millions, Aug 23 p 109
Repayment to RFC of Permanente Metals Loan, Dec 6 p 94
Steel Plans at Fontana, July 5 p 99

Kaiser-Frazer Corp.:
Builds Two New Lines of Cars, Aug 2 p 74
Leases Willow Run Plant, Sept 27 p 76
Plans Production of Own Bodies, Dec 20 p 76
Sets 1500 Cars a Day Goal, Dec 27 p 95
Wants Willow Run, Aug 30 p 58

Kaiser, Henry J.:
Car on West Coast Carries 76 Hp Continental, July 26 p 112
Eaton-Kaiser Plan Securities Issue to Pay Fontana-RFC Loan and Buy Geneva, Oct 25 p 83
Joins With Graham-Paige to Build Two New Lines of Cars, Aug 2 p 74
Latest Developments in the Kaiser Industries, Nov 15 p 92
Proposes Syndicate to Lease Far Western Steel Plants, July 19 p 99
Reasserts Plants for Peacetime Steel and Motor Cars, Oct 11 p 102
Western Syndicate Proposal Creates Mixed Reactions, July 26 p 92

Kato Engineering Co.:
Direct Current Motors*, Nov 22 p 79

Kaynar Mfg. Co.:
Anchor Nut*, Aug 30 p 55
Anchor Type Lock-Nut*, Dec 20 p 69

Kearney-Trecker Products Corp.:
Boring Machine*, Sept 27 p 71
Cutter Design Evaluated by Production Runs*, Nov 22 p 54

Kelite Products, Inc.:
Aluminum Cleaner, Sept 20 p 85
Pickling Inhibitor, Sept 20 p 86
Plater's Cleaner, Sept 20 p 85

Keller, F.:
Metallography of Alcoa 75S Alloy*, Oct 4 p 64

Keller, F., and Edwards, J. D.:
Performance and Structure of Anodic Coatings on Aluminum*, Nov 22 p 75

Keller Tool Co.:
Buffing Tool*, Dec 13 p 79

Kelley, Floyd C.:
Sintered Beryllium for X Ray Tube Windows*, July 26 p 68

Kelsey Hayes Wheel Co.:
Plant for Sale, Aug 2 p 130
Parts Shipments Resumed, Dec 13 p 84

Kent-Owens Machine Co.:
Automatic Milling Machine*, Sept 27 p 69

Kett Tool Co.:
Floating Tool Holder*, Oct 25 p 71

Keystone Steel & Wire Co.:
Annual Report, 1944-45, Aug 30 p 94
Earnings, Third Quarter, 1945, Nov 22 p 159

Kidde, Walter, & Co.:
Fire Extinguisher*, Aug 16 p 77
Pressure Switch*, Sept 13 p 74

Kilgore, Harley M.:
Senate Committee Recommends SPB Control Foreign Disposals, July 19 p 108

Kindt-Collins Co.:
Handy Container*, Dec 13 p 80

Kinney, S. P., Engineers:
Butterfly Valves*, Nov 15 p 80
Mechanical Unloader for Ore Cars, Oct 25 p 64

Klinker, Capt. L. G.:
How to Protect Motor and Machine Components*, Oct 18 p 64

Kopecki, Ernest S.:
Gas Carburizing*, (3 Parts) Oct 18 p 50; Oct 25 p 52; Nov 1 p 60

Koppers Co., Inc.:
Buys Wailes Dove-Hermiston Corp., Dec 27 p 135

Korobov, P.:
Soviet Steel Industry Shifted Eastward During the War, Nov 29 p 107

Krieger Color & Chemical Co.:
Color Glue, Sept 20 p 86
Plastic Dyeing Compound, Sept 20 p 86

Krug, J. A.:
Copper Consumption Postwar to Continue High, Nov 8 p 148
Meets Steel Executives, July 12 p 100
Reports on Wartime Steel Production and Consumption, Oct 25 p 107
Wartime Expansion in U.S. Aluminum Capacity to Be 50 Pct Surplus, Nov 15 p 136

L

L. A. B. Corp.:
Vibration Test Table*, Nov 1 p 69

Labor:
Alabama Job Future Sees 24 Pct Increase, Sept 6 p 140
Bell Aircraft Plant Getting 48-hr Work Week Exemption, July 5 p 116
British Unemployment to Reach 300,000 This Year, Dec 27 p 78
Buffalo Earnings Decline, Dec 6 p 172
Buffalo Employment Down, Aug 2 p 132
Buffalo Labor Shortage Remains Despite Payrolls Dropping, Sept 13 p 149
Carnegie-Illinois Inaugurates 40-hr Work Week, Aug 23 p 142
Centralized Labor Dept. Opens Door for Secretary, Oct 4 p 130
Check-Off Ordered by WLB, Aug 16 p 140
Chicago Employment Declines, Sept 13 p 107
Chicago Factory Indexes Decline, Aug 16 p 120
Chicago Industrial Jobs Jump 50 Pct Since 1939, Sept 6 p 168
Cleveland Survey Reveals First Employment Advance, Nov 15 p 181
Columbia Steel Foremen Petition to Form Own Union, Nov 22 p 92
CED Issues Report in Study of Problem for Increased Employment, Oct 18 p 136
Congress Awaiting Labor-Management Conference Action Before Taking Up Legislation, Nov 22 p 88
CIO Again Loses Vote at Thompson Products, Nov 1 p 94
CIO Proposes Workers Run Willow Run Plant on Co-operative Basis, July 12 p 92
CIO-UAW to Oppose Policy on Unemployment Compensation, Aug 16 p 106
Congressional Action to Aid Employment Proposed at Metal Trade Meeting, Dec 6 p 162
Costs Per Unit Have Advanced 46 Pct, July 26 p 134

Current Anomaly Disclosed by USES Regional Director, Oct 25 p 103
Curtiss-Wright Lays Off Buffalo Workers, Nov 15 p 84
Cutbacks Cause 11 Pct Drop in Employment, Sept 20 p 161
Cutbacks Release Workers, July 5 p 107
Dept. of Labor Survey Shows 40 to 48-hr Work-Week Lessens Efficiency and Absenteeism Increases, Sept 13 p 78
Detroit Labor Tension Rushing Towards a Climax, Nov 22 p 109
Employment Decline in Ohio Slight; Manpower Shortage Is Critical, July 26 p 130
Employment, Hours and Wages, April, July 12 p 100
Employment, Hours and Wages in Steel Industry, May, July 19 p 95; June, Aug 16 p 99; July, Oct 4 p 128; August, Oct 18 p 95; September, Nov 22 p 107; October, Dec 20 p 97
Factory Employment in Buffalo Declines, Nov 15 p 158
5000 Workers Released by Studebaker Contract Cancellation, July 5 p 116
Ford and Foremen's Assn. Extend Their Contract, July 19 p 105
Foremen's Group Says Conciliation Service Needs Revitalizing, Dec 27 p 98
Foundries Need Recruits, Nov 15 p 180
Full Employment Bill Calls for New PWA, Aug 30 p 62
Full Employment Bill, House Version, Sheds "Jobs for All" Theme, Dec 20 p 110
General Motors and Auto Union Discussions, Nov 1 p 72
G.M. Seeks to Modify Veterans' Seniority, Aug 2 p 76
Government-Industry-Labor Face Mutual Responsibilities, Sept 13 p 107
Hagan Corp. Sets Up Plan to Back Workers in Obtaining Degrees*, Nov 22 p 146
Harvester Promises High Employment Level to Continue, Sept 13 p 112
Hillman Announces Nationwide Campaign, Aug 16 p 105
How a Cutback Which Involves Substantial Release of Labor Is Handled, Chart, July 19 p 105
Hydraulic Machinery, Inc. Establishes Sharing Plan, Dec 27 p 114
Jahco to Reduce Payroll by 25 Pct, July 26 p 107
Krug Praises Labor's Participation in WPB in Solving Problems, Nov 8 p 110
Labor and Management Are Colliding Head-on in the Ford and G.M. Negotiations, Dec 27 p 66
Labor Force, 1929-44, 1947, Aug 23 p 62
Labor-Management Conference Agenda Announced, Nov 1 p 95
Labor Picture Featured by General Discord and Resistance*, Nov 15 p 107
Merger Denied by Farm Equipment Metal Workers, Aug 16 p 103
Milwaukee Employment Prospects Bright, Sept 13 p 132
Mine Foremen Union Case Decision to Be Handed Down Soon, Nov 1 p 97
Miners Get Extra Food Rations, Aug 2 p 118
Munition Cutbacks Affect 3050 Workers on 110 Prime Orders, July 12 p 90
Murray Says Fact-Finding Is Utterly Futile, Deceptive and Aimless, Dec 20 p 107
NLRB Wants Labor Disputes Act Repealed, Nov 22 p 88
New Union Election Setup, Dec 6 p 122
Niagara Frontier Put in No. 2 Area, July 5 p 120
Ohio Compensation Rules Are Modified, Oct 25 p 147
Ohio-Michigan-Kentucky Factory Employment Expected to Increase Toward End of Year, Nov 29 p 128
Ohio Women Free of WMC Controls; 90,000 Affected, Aug 16 p 132
Organized Labor Must Aid in Transition to Postwar Peace Economy, Aug 16 p 104E
Packard Protests UAW's Covering Overtime Notices, Aug 2 p 76
Precedent Set for Dropping of Women From Plant Payroll, July 26 p 110
President Truman Acts in Crisis, Dec 6 p 113
Public Works Program Seen as No Answer to Unemployment Problem, July 5 p 133
Reconversion Causes Shortened Work Week in Cleveland, Aug 2 p 122
Small Business Must Take Large Part in Re-employment Plan, Wilkie Claims*, Dec 6 p 148
Snyder Predicts 8 Million Unemployed, Oct 11 p 118
Snyder Report Admits Changes to Result in Temporary Unemployment, Aug 23 p 107
Steel Workers to Demand More Points, Aug 2 p 104
Steps in Dispute Conciliation Outlined, Sept 6 p 131
Stoppages Hamper Northwest Steel Rolling Mills, July 26 p 94
Superseniority Provided for All Wartime Replacement Veterans, Sept 27 p 105
Superseniority Ruling Sought by Union and Western Cartridge Co., Dec 20 p 106
Thomas Promising Many UAW Strikes Following VJ-Day, July 26 p 109
Trend of Strikes Seen Dictating Legislation*, Dec 13 p 109
Unemployment Claims Increasing Steadily, Oct 11 p 128
U.S. Steel-USWA Board Set Up, July 19 p 102
Wage Increases Approved in Cast Iron Soil Pipe Industry, Dec 27 p 98
War Nerve Concern May Be Unfounded, July 12 p 124
Weir of National Steel Refutes USWA Statistics in Report to Employees, Nov 22 p 110
West Coast Industry Leveling Off With Net Gain of Over 850,000 Workers, Sept 27 p 82
Whiting Corp. Back to Shorter Work Week, Sept 6 p 148
(See also Rehabilitation, Veterans; Steel Industry, Labor; Strikes)

Labor, Wages:
Administration Beset With Problem of Wage and Price, Oct 18 p 80
Alcoa Solves Wage Raise Issue, Nov 22 p 140
American Management Assn. Reports Annual Wages and Wage Guarantees as More Practicable, Nov 8 p 142
Auto 30 Pct Pay Raise Dispute Reports No Progress, Oct 18 p 78
Auto Union Plans Strike in All G.M. Plants as Step in 30 Pct Pay Raise Campaign, Sept 20 p 88
Automotive Industry 30 Pct Issue Likely to Set Pattern for the Nation, Oct 11 p 76
Ayres Condemns Policy to Put Costs Up and to Hold Prices Down, Nov 29 p 80
Ayres Recommends U.S. Limit Wage Grants to Necessities of Life, Nov 1 p 132
Brookings Institution Sees Economic Structure Endangered by Wage Increases, Sept 27 p 78
CED Chairman Warns Against Return to Prewar Level, July 26 p 142
CIO Touches Off New Wage Drive Following Lifting of Controls, Aug 23 p 143
Extensive Study of Guaranteed Annual Wage Ramifications Planned, Aug 2 p 80
Fairless Says Ceilings and Wage Stabilization Prevent $2 Day Increase, Oct 25 p 99
Guaranteed Annual Wage at Parker Mfg., Sept 27 p 93
Hinrichs Estimates Less Than 1 Pct Rise With 65c Minimum, Oct 4 p 96
Incentive System Dropped by Storms Drop Forging Co., Sept 27 p 93
Lukens Employees Get Retroactive Pay, Oct 4 p 109
Merit Increase Plan Ordered by Regional WLB at Harvester, July 26 p 141
Midwestern Wage Adjustments Approved by WLB, Sept 6 p 138
Murray Sounding Keynote for Wage Drive by Unions, Aug 30 p 82
New Rate Ranges Set for Metal-Working Plants in Midwest, Aug 9 p 105
Overtime Pay Freed, Aug 30 p 91
Payrolls in Iron and Steel Industry, Chicago, 1939-VJ-Day, Oct 11 p 105
Pullman Standard Sets Wage Rates for Employees, Dec 6 p 158
Reduction in ACF Hourly Rate of Pay for Mechanics Denied by WLB, Oct 18 p 82
Reimbursement Steps; Victory Holiday Pay, Sept 6 p 136
Salary Controls Lifted, Aug 30 p 83
Scrapping of Steel Wage Controls Primes CIO for General Increase Fight, Aug 23 p 117
Strike Vote to Bring Steel Wage Question to a Head, Nov 1 p 93
Timken Co. Volunteers 10 Pct Increase for All Employees, Sept 13 p 108
Truscon to Pay Back Wages, Oct 11 p 102
USWA-Wildman Contract Guarantees Annual Wage, Aug 2 p 101
Wage Increase Granted to Soil Pipe Industry, Aug 16 p 86
Wage Raise Rejected by Youngstown; Discusses Employer-Employee Relations, Nov 1 p 97
Wage Rate Increases to Be Established on 33 Pct Cost of Living Increase, Dec 13 p 110
WLB Denies Wage Advance at Frank Foundries, Nov 22 p 157
WLB Leaves U.S. Steel Severance Pay Disagreement to Collective Bargaining, Nov 15 p 111
WLB Orders Shift Premium at Perfection Gear Co., Nov 22 p 121
Wright Workers Get 30 Pct Increase, Oct 18 p 103

Labor-Management Conference:
Agenda, Nov 1 p 95
Congress Awaiting Action Before Taking Up Labor Legislation, Nov 22 p 88
Labor Picture Featured by General Discord and Resistance*, Nov 15 p 107
Seeks Genuine Collective Bargaining, Steinkraus, President of Bridgeport Brass, States, Nov 15 p 121
Truman Asks Results, Nov 8 p 107

Lake Superior Iron Ore Assn.:
Blast Furnace Data for U.S. and Canada, Nov 1 p 91
Consumption of Lake Ore, June, July 26 p 103; July, Aug 30 p 82; August, Oct 11 p 98; September, Nov 1 p 91; October, Nov 29 p 93; November, Dec 27 p 87

Landis Machine Co.:
An Appraisal of Subzero Hardening of High Speed Steel*, (2 Parts) July 26 p 54; Aug 2 p 64
Die Head, Dec 20 p 71
Work Holding Fixture*, Dec 20 p 69

Landis Tool Co.:
Tool Grinder*, Aug 9 p 77

Lavin, R., & Sons, Inc.:
Porosity in Navy G and M Metals and Red Brasses*, Nov 15 p 68

Lead:
Auto Quotas Down, Dec 27 p 102
Control Modification Expected, Aug 16 p 152
Control Order Relaxation Studied, Aug 23 p 146
Deficit in Supply to Come From Stockpile, Oct 4 p 164
Effect of Additions on Free-Cutting Steels, Aug 16 p 75
Foreign Purchases Studied, Aug 30 p 100
Mexican Lead Goes Abroad, Oct 4 p 164
Occurrence in Lead-Bearing Steels, Sept 20 p 83
Outlook Unchanged, Nov 1 p 108
Position Will Require Restriction, Dec 20 p 116
Short Supply, Oct 18 p 112
Stocks Improving; Chemical Use Expanded, Aug 9 p 136
Supply Easing, July 5 p 142
Supply Improving, July 19 p 146
Tighter WPB Restrictions Anticipated, Sept 13 p 152

Le Brun Mfg. Co.:
Sharpening Attachment, Sept 6 p 98

Leigh, Albert, and Herwig, R. S.:
Throwing Power of Anodizing Baths*, Dec 20 p 51

Leiman Bros.:
Dust Collector*, Dec 6 p 83

Le Maire Tool & Mfg. Co.:
Die Tapping Machine*, Aug 9 p 76
Vertical Drill*, Sept 27 p 70
Vertical Drilling Machine, Nov 29 p 68*

Lend-Lease:
Assistance Terminated, Aug 23 p 108
Chinese Technical Men Visit U.S. for Training, Dec 6 p 166
Crowley Proposes Program to Bridge Gap Following End, Aug 30 p 81

Leslie Co.:
Temperature Regulator*, Dec 6 p 83

Le Tourneau, R. G., Inc.:
Branch Factory in England, Aug 16 p 130

Lewis Foundry & Machine Div.:
Develops Scrap Shears, Nov 8 p 121

Lift Trucks, Inc.:
Load-Carrying Truck*, Oct 4 p 85

Light Metal Machinery, Inc.:
Established to Produce Die Casting Machinery, July 12 p 134

Lighting:
(See Electrical Equipment; Plant Equipment)

Lincoln Electric Co.:
Anti-Spatter Compound, July 19 p 73
Files Counter Suit Against Linde Air Products Co., Oct 18 p 78
High Tensile Electrode, Oct 11 p 72
Power Take-Off*, Oct 11 p 74
Shielded Arc Electrode*, July 19 p 72

Lincoln Electric Railway Sales Co.:
Locomotive Cylinders Fabricated by Welding*, July 5 p 60

Lincoln, R. A.:
Selecting the Proper Heat-Resistant Steel, Nov 8 p 74

Linde Air Products Co.:
Files Infringement Suit, Oct 11 p 133
Lincoln Electric Files Counter Suit, Oct 18 p 78

Lindsay & Lindsay:
Prefabricated Metal Sheets*, Aug 23 p 83

Link-Belt Co.:
Oscillating Trough Conveyor, Oct 4 p 87

Lintern Corp.:
Aire-Rectifier-on-Cab*, Oct 4 p 85

Lippert, T. W.:
The German Steel Industry*, Dec 20 p 54

Lipson, S., Markus, H., and Rosenthal, H.:
Precision-Cast Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64

Lloyd, Thomas E.:
Fairless Says Ceilings and Wage Stabilization Prevent $2 Day Increase, Oct 25 p 99
Steel to Hold Its Position in Postwar Period, Sept 20 p 120
Strike Vote to Bring Steel Wage Question to a Head, Nov 1 p 93
Youngstown Coal Rate Reductions Branded "Utterly Inadequate," Oct 25 p 95

Locke, Charles:
Acid Electric Furnace Carbon Control*, Oct 18 p 69

Lockheed Aircraft Corp.:
Airquipment Div. to Manufacture Equipment, Oct 25 p 84
Corrosion of Aluminum by Die Materials*, Sept 20 p 72
Plastic Tooling Procedures*, (2 Parts) July 19 p 55; July 26 p 74

Lodge & Shipley Machine Tool Co.:
Automatic Lathe*, Sept 27 p 72

Logsdon, H. N., Zeigler, P. P., and Householder, L. E.:
Aluminum—Alloy R303*, Oct 4 p 74

Lone Star Steel Co.:
Economic Possibilities Studied, Sept 27 p 99

Lubricants:
Bearing Oil Spray Reduces Jet Heat, Aug 23 p 140
Botlube for Conveyors, Turco Products, Inc.*, Oct 4 p 86
Drawing Compound, Northwest Chemical Co.*, Dec 27 p 63
Engine Lubricant, Carbide & Carbon Chemicals Corp., Aug 16 p 77
Lubrication Cart, Stewart Warner Corp.*, Sept 13 p 75
(See also Coolants; Oil)

Lucht, Fred W.:
Effect of Work Position in Face Milling*, (2 Parts) See reprint Jan. 24, 1946 p 64; Dec 13 p 64

Lukens Steel Co.:
Employees Get Retroactive Pay, Oct 4 p 109

Luscombe Airplane Corp.:
All Metal Personal Planes Now in Production, Sept 6 p 166

Lyon Metal Products, Inc.:
Steel Stools*, Dec 6 p 83

Lyon-Raymond Corp.:
Die Separator, Dec 27 p 64
High-Lift Truck*, Oct 4 p 88

M

Machine Products Corp.:
Indexing Head*, Oct 25 p 72

Machine Tool Industry:
Advance Demand for Government Tools Cancels Show, Sept 27 p 134
Age, Condition, Price Formula Established, Dec 20 p 114
AMTDA Meeting Discusses Surplus Machines Disposal, Nov 29 p 133
Buick Plant to Handle Sale of Surplus Tools, Nov 22 p 123
Builders Look to Foreign Inquiries, Nov 8 p 122
Builders Plan to Combat Surpluses, Oct 4 p 162
Builders Urge More Goods for More People at Less Cost*, Nov 1 p 101
Cancellations Prove Slow; Builders Quietly Confident, Aug 23 p 144
Cancellations to Top $150,000,000, Aug 16 p 150
Chicago Area Sales Not Yet Satisfactory, Oct 25 p 108
China-America Group Forms Advisory Committee, Oct 18 p 152
Clayton Formula Extended for Tools, Nov 15 p 124
Corporate Income Trend of Midwestern Manufacturer, (Chart) Sept 13 p 106
Cutting Tool Men Approve Proposed New Sales Program, July 5 p 136
Dealers May Sell Surplus Machines, Nov 1 p 106
Detrola Disposes of Machine Tool Rights, Dec 27 p 100
Disposal Policy Delay Laid to Fear, Aug 2 p 132
Electrical Standards Set, Dec 6 p 123
England Rescinds Disposal Scheme, Nov 22 p 124
Exact Needs Hard to Define, Aug 9 p 134
Firms Feel Outlook Becoming Brighter, Sept 6 p 130
French Plan to Replace 265,000 Tools in Comprehensive 5-yr Program, Sept 6 p 176
General Purpose Tools Available for Public Sale Under RFC Rule, Sept 27 p 134
Heavy Cancellations Put Crimp in Rosy Outlook, Oct 11 p 106
Impact of Surplus Felt, Nov 22 p 124
Index Numbers of Prices by Months, 1939-45, Aug 30 p 98
Inquiries Remain Heavy, Dec 20 p 114
Kraut Sees High Rate for 4 Yr, Nov 8 p 122
Low Tool Priority Seen Delaying Reconversion Job, Aug 16 p 137
New Regulation on Labor Rates Causing Some Concern, July 5 p 140
Observers See Gloomy Outlook Pending the Customary March Upturn, Dec 27 p 100
Order Books Still Confused Because of V-J Cancellations, Aug 30 p 98
Orders Lower; Exports in Prospect, Oct 11 p 131
Prices Remain at Fixed Levels to June, Aug 30 p 98
RFC Acts in Surplus Sales, Dec 6 p 124
RFC Approves Proposal to Allow Tool Dealers to Aid in Surplus Sales, Nov 29 p 108
Reconversion Outlook More Optimistic, Sept 20 p 164
Reconversion Underway Before German Defeat; Few Cancellations, Oct 25 p 108
Segal, Machinery Institute Head, Scores SPB, July 12 p 132
SWPC Surveying Needs of Users, Sept 13 p 148
Special Tools Will Be Sold at Auction, Oct 11 p 130
Strikes Affect Output, Nov 8 p 122
Surplus Dealers to Get 12½ Pct, Nov 29 p 99
Surplus Disposal Still Hectic, Oct 18 p 110
Surplus Problem Solution Outlined by Distributors' Assn., Nov 29 p 100
SPA Internal Trouble Seen Delaying Sales Ruling, Dec 6 p 124
Surplus Tools Still in the Doldrums, Nov 22 p 124
Surpluses Cloud Picture; Foreign Inquiries Heavy, Sept 13 p 150
Tool Up-Turn Expected Next Spring, Dec 13 p 122
Unfilled Orders and New Business Still Close to War Peak, Oct 11 p 134

Machine Tools:
Adjustable-Range Force-Measuring Spring*, Sept 20 p 63
Air-Actuated Fixture for Coining Grooves for Shaft Journals, Westinghouse Electric Corp.*, Nov 8 p 81
Angle Dresser, Nicholas-Morris Corp.*, Dec 20 p 70
Angle Plate, Madco Products, Inc.*, Dec 20 p 69
Automatic Centering Machine, Pratt & Whitney Div.*, Nov 29 p 66
Automatic Cycle Machine, Snyder Tool & Engineernig Co.*, Aug 9 p 77
Available Government Tools in Detroit Area, Aug 30 p 77
Blank Collets, Zagar Tool, Inc.*, Sept 6 p 99
Britain's Tools Here Being Sold, July 19 p 144
Buick Offers 0.1 Pct of Cost for Tools, July 5 p 140
Bullard Mult-Au-Matics, Setup Charts*, Dec 13 p 54
Clamps, Speed, Grand Specialties Co., Sept 6 p 99
Chuck, Collet, Redmer Air Devices Corp., Aug 30 p 55
Chuck, Drill, Jacobs Mfg. Co.*, Oct 25 p 72
Chuck Grip, Keyless, Turner Bros., Inc., Oct 25 p 71
Chuck, Magnetic, Hanchett Mfg. Co.*, Dec 20 p 72
Chucks, Magnetic Holddown, Facilitate Plate Welding*, July 19 p 68
Diamond Hand Hones, Bay State Abrasive Products Co.*, Oct 25 p 70
Diamond Tools, Selection and Use*, (2 Parts) Aug 30 p 38; Sept 6 p 94
Drawbench, Rack-Type, Developed by Aetna-Standard on Display*, Aug 30 p 82
Floating Tool Holder, Kett Tool Co.*, Oct 25 p 71
Gage Control*, Sept 20 p 68
Gage, Cylindrical Plug, Schrillo Aero Tool Engineering Co.*, Oct 25 p 70
Gaging Tool, Handy*, Nov 29 p 48
Gun Cutbacks Free Ohio Tools, July 19 p 144
Hammer, Air, Superior Mfg. Co.*, Oct 25 p 71
Hammer, Lead, Nu Products Co., Dec 20 p 70
Indexing Head, Machine Products Corp.*, Oct 25 p 72
Indexing Machine, W. K. Millholland Machinery Co.*, Nov 29 p 68
Inventories of Government-Owned Tools and Production Equipment Compiled by RFC, Aug 9 p 110
Jig Borer, Pratt & Whitney, Sept 27 p 70
Jig Borers, Production Work*, Aug 23 p 72
Jig, Vertical, Monarch Governor Co.*, Sept 6 p 98
L-147 Order Revoked, July 12 p 132
Lathe, Automatic, Lodge & Shipley Machine Tool Co.*, Sept 27 p 72
Lathe, Brake Drum, Barrett Equipment Co.*, Sept 27 p 70
Lathe, Precision, Hardinge Bros., Inc.*, Nov 29 p 66
Lathe, V-Belt Drive, South Bend Lathe Works, Sept 27 p 70
Lathes, Center Driven, Snyder Tool & Engineering Co.*, Nov 29 p 68
Magnetic Separator, Stearns Magnetic Mfg. Co., Nov 29 p 67
Man-Au-Trol, Automatic Operation of Vertical Turret Lathes*, Oct 25 p 68
Metro Positioner, Metro-Vise Co.*, Oct 25 p 71
New Uses for Hardsteel*, Dec 13 p 68
Orders and Shipments, June, Aug 9 p 134; July, Sept 6 p 176
Plastic Tooling Procedures*, (2 Parts) July 19 p 55; July 26 p 74
Rotary Stock Stop, Barnaby Mfg. & Tool Co.*, Dec 20 p 68
Screw Machine Setup Charts*, (Part 4) July 5 p 63
Screw Machine Tools, Boyar-Schultz Corp.*, Sept 6 p 98
Shipments Down in September; Heavy 1946 Demand, Nov 29 p 108
Shock Absorbing Cushion, P. J. Baima*, Oct 25 p 71
Surplus Witnesses Conflict on Desirability of Central Inventory, Aug 9 p 110
Surpluses Itemized, Aug 9 p 114
Thread Roller, Steinle Machine Co.*, Aug 9 p 76
Torque Screw Driver, Apco Mossberg Co., Sept 6 p 99
Triangular Tool Bit, Wedell Tools, Inc.*, Dec 20 p 72
Tungsten Carbide Machine Parts*, Sept 27 p 55
Warner & Swasey Makes New Five Spindle Turret Lathe, Dec 20 p 141
Wartime Production at $4.5 Million, Oct. 11 p 110
Work Holding Fixture, Landis Machine Co.*, Dec 20 p 69
Wrench, Botnik Motor Corp.*, Sept 6 p 100
Wrench, Impact, Aero Equipment Corp., Aug 30 p 55
Wrenches, Torque, Jo Mfg. Co.*, Oct 25 p 70; Dec 20 p 68

Machinery:
Dealers' Assn. Sees Surplus Program Lasting for Ten Years, Nov 1 p 103
Greenawalt Machine for Sintering Borings, Dec 20 p 50
Installation Charges Billed With Machinery, Aug 30 p 91
Market Estimates in 1947, Aug 23 p 61
OPA Announces New Postwar Price Policy, Dec 6 p 111
Price Changes Limited for Manufacturers, Aug 9 p 102
Procedure to Determine Reconversion Prices, Oct 11 p 100
Sales at Curtiss-Wright Draws Thousands of Bidders, Nov 22 p 161

Machinery & Allied Products Institute:
Analyzes the Bogey of Economic Maturity, July 19 p 116

Machinery Dealers' National Assn.:
Chapter Officers Elected July 19 p 148
Committees Appointed, Dec 13 p 156
Disposal Policy Delay Laid to Fear, Aug 2 p 132
Officers Re-elected, Aug 9 p 86
Surplus Program Seen Lasting for Ten Years, Nov 1 p 103

Machining:
Analysis of Processes for Cutting of Metals Described by Merchant and Zlatin, Oct 4 p 119
Automatic Operation of Vertical Turret Lathes*, Oct 25 p 68
Automatic Roto Shaving for Fine Surfaces*, Dec 27 p 56
Bullard Mult-Au-Matics, Setup Charts*, Dec 13 p 54
Dimensional Control to Millionths*, Oct 4 p 79
Free Cutting Copper Rod Machines Easily*, July 26 p 60
Indexing Machine, W. K. Millholland Machinery Co.*, Nov 29 p 68
Milling Heavy Sections of 14ST Aluminum Alloy*, Oct 18 p 62
Shaving Machine, National Broach & Machine Co.*, Aug 9 p 77
Special Machine, Cross Co.*, Nov 29 p 68
V-Belt Drive Lathe, South Bend Lathe Works, Sept 27 p 70

Mackintosh-Hemphill Co.:
Tilting Hot Saw*, Sept 27 p 71

MacKusick, M. H.:
Twin-Arc System Improves Welding Efficiency*, Sept 27 p 58

MacKusick, M. H., and Arthur, J. B.:
Trepanning Welded Joints for Defects*, Sept 6 p 80

Madco Products, Inc.:
Angle Plate*, Dec 20 p 69
Grinding Wheel Dresser*, Dec 20 p 71
Turret Drill Head*, Sept 6 p 97

Magnaflux:
Magnetic Particle Detection of Retained Austenite and Carbide Segregation*, Oct 25 p 46

Magnesium:
Cost and Research Open New Fields to Products, Sept 27 p 120
Distribution of Reduction Plants, (Map) Dec 20 p 80
Dow Speeds Use, Aug 2 p 134

Emergency Gas Welding of Parts, Dec 6 p 65
Estimates of Postwar Consumption, Dec 20 p 78
Extruded Magnesium for Safety Blocks*, Nov 1 p 63
Drawing and Ironing ½-in. Plate*, July 5 p 74
Hot Forming Magnesium Alloy Sheet*, Aug 16 p 56
Light-Metals Plants Disposal Plan Presented, Sept 13 p 105
Moll Says Wartime Advances in Technique Provide for Future*, Nov 1 p 138
Price Ceilings Lifted, Aug 30 p 90
Shipments Drop Sharply in June, Aug 30 p 100
SPA Recommends Some Producers Be Kept in Partial Use, Dec 20 p 78
Symington Considers Private Plants Adequate for Postwar, Dec 13 p 118
Welding Fluxes, Nov 22 p 71
(See also Nonferrous Metals)

Magnesium Electron, Ltd.:
Welding Fluxes for Magnesium, Nov 22 p 71

Magnetic Holddown Chucks Facilitate Plate Welding, by C. P. Hubert*, July 19 p 68

Magnetic Particle Detection of Retained Austenite and Carbide Segregation, by R. J. Dooley*, Oct 25 p 46

Magnus Chemical Co., Inc.:
Small Cleaning Machine, Dec 13 p 80

Mallick, R. W.:
Efficiency in Material Handling Scored, Nov 15 p 123

Management:
Charting Production With Peg Board*, Aug 9 p 66
Choosing the Consulting Engineer, July 5 p 72
Cox Cites Need of Safety Program in Industry to Reduce Accidents, Nov 1 p 142
Estimating Die Costs*, Nov 29 p 44
Gage Control*, Sept 20 p 68
Government-Industry-Labor Face Mutual Responsibilities, Sept 13 p 107
Ideas on the "Lost Art" of Small-Lot Production*, Sept 27 p 108
Labor Picture Featured by General Discord and Resistance, Nov 15 p 107
Plans Set for Strong Drive on Production-Delaying Accidents, July 26 p 132
Rosenthal Urges Management Aid for Prosperous Growth of Smaller Business, Oct 25 p 149
Time Allowances for Drill-Press Work*, Sept 20 p 58
Truman Asks Results of Labor-Management Conference, Nov 8 p 107

Manganese:
High Purity Manganese to Be Marketed, Oct 18 p 112
Price Reduced, Sept 6 p 178

Manpower:
Manpower and Unemployment Reverse Positions as Major Problems at War End, Aug 16 p 106
Navy Air Technical Training Fills Vocational Education Vacuum*, Sept 27 p 104
Problem Basic to Postwar Agriculture, Dec 27 p 130
Shortage Aggravating Tight Sheet Steel Situation, July 26 p 88
(See also Labor)

Mansfield & Green:
Pressure Gage Tester*, Aug 23 p 84

Mant, Gilbert:
Australian Iron Ore Mountain Estimated to Contain 100 Million Tons*, Sept 20 p 119

Marco Co., Inc.:
All Purpose Pump, Aug 16 p 78

Marine Tests Rate Alloy Performance, by J. Albin*, July 26 p 62

Maris, E. L.:
Plastic Tooling Procedures*, (2 Parts) July 19 p 55; July 26 p 74

Market Forge Co.:
Industrial Truck*, Oct 4 p 86

Marking:
Color Code for Bar Stock*, July 12 p 56
Fast Stenciling on Tubing*, Nov 22 p 74
Individualized Stamps, New Method of Steel Stamps, Inc.*, Dec 20 p 68
Surplus Material Identification*, Oct 18 p 53

Markus, H., Rosenthal, H., and Lipson, S.:
Precision-Cast Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64

Marshall, Gen. George C.:
Reports German Munitions Better Than Ours*, Oct 18 p 160

Martin, Glenn L., Co.:
Fast Stenciling on Tubing*, Nov 22 p 74
Rivet Sorting Machine*, Sept 6 p 93

Massey-Harris Co.:
Tractors to Keep Employment at Present Level, Sept 13 p 149

Massillon Aluminum Co.:
Buys DPC Plant to Make Aluminum and 18-8 Pots, Sept 27 p 136

Master Gage Co.:
Thread Plug Gages, Dec 20 p 72

Master Specialty Co.:
Abrasive Tool*, Aug 30 p 54

Materials Handling:
Aire-Rectifier-on-Cab, Lintern Corp.*, Oct 4 p 85
Barrel Cradle, Toggle-Type, Palmer-Shile Co.*, Oct 4 p 88
Bucket, Hydro-Electric, Victor R. Browning & Co., Inc.*, Oct 4 p 85
Carrier, Double Bucket, Cleveland Crane & Engineering Co.*, Oct 4 p 86
Conveyor Belts for Charging Dolomite, Goodyear Tire & Rubber Co., Oct 4 p 88
Conveyor Drive, Island Equipment Corp., Oct 4 p 85
Conveyor Lubricant, Turco Products, Inc.*, Oct 4 p 86
Conveyor, Oscillating-Trough, Link-Belt Co., Oct 4 p 87
Conveyor, Roller, John Moore Specialty Co.*, Oct 4 p 87
Crane Unit, Hyster Co.*, Oct 4 p 88
Efficiency Scored by Westinghouse Engineer, Nov 15 p 123
Hoist Drive, General Electric Co., Oct 4 p 86
Loading Practice for Air Cargo Seen Important and Cost Factor, Dec 13 p 120
Magnet, Lifting, Electric Controller & Mfg. Co.*, Oct 4 p 86
Magnet Spout, Stearns Magnetic Mfg. Co., Oct 4 p 87
Mechanical Car Unloader, Oct 25 p 64
More Rubber in Belting, Dec 13 p 121
Ore Loader, Trackson Co.*, Nov 29 p 99
Pittsburgh Group Formed to Aid Practices, Nov 8 p 115
Ramp, Movable, Joyce-Cridland Co.*, Oct 4 p 88
Safe-T-Lift Slings, Hercules Sling Co.*, Oct 4 p 87
Skid Box Pallet, Elwell Parker Electric Co.*, Aug 23 p 83
Tractor, Industrial, Towmotor Corp.*, Oct 4 p 88
Trailer, Easy-Loading, Palmer-Shile Co.*, Oct 4 p 86
Truck, High Lift, Lyon-Raymond Corp.*, Oct 4 p 88
Truck, Industrial, Market Forge Co.*, Oct 4 p 86
Truck, Load-Carrying, Lift Trucks, Inc.*, Oct 4 p 85
Truck, Stock Checker's, Palmer-Shile Co., Oct 4 p 88
Vat-Dumping Unit, Elwell-Parker Electric Co.*, Oct 4 p 87
Versatile Stowage With Eight-way Pallets*, Aug 30 p 34
Wire Hope, American Chain & Cable Co., Oct 4 p 87

Materials Handling Society:
Formed in Pittsburgh to Aid Practices, Nov 8 p 115

Maximum Carbon in Carburized Cases, by Sidney Breitbart*, Oct 11 p 50

McClung, E. R.:
No Shipbuilding Utopia, Sept 27 p 90

McDermid, W. D., Chemical Co.:
Electrolytic Cleaner, Sept 20 p 84

McIntosh, R. E.:
Diecasting Close-Fit Threads*, Aug 30 p 50

McKee, Arthur G., & Co.:
Analyzes Geneva Steel Markets for RFC*, Nov 15 p 112
Fontana Report Emphasizes High Cost and Narrow Markets, Nov 22 p 94
Postwar Fontana Operation Depends on Lower Cost, Nov 29 p 102

McLouth Steel Corp.:
Stainless Production Begun, Sept 20 p 112

Mead (Senate) Committee:
Reconversion Job Not Being Done by Mobilizer Vinson, Report Warns, Aug 2 p 96

Meadows, John J.:
Setup Charts for Automatic Screw Machines*, (Part 4) July 5 p 63
Setup Charts for Bullard Mult-Au-Matics*, Dec 13 p 54

Mech-Art Products Corp.:
Hydraulic Press*, Dec 27 p 62

Mellaphone Corp.:
Rectifiers*, Nov 22 p 80

Melnitsky, Benjamin:
Color Code for Bar Stock*, July 12 p 56

Mercury:
Future Seen in Tropical Battery, Dec 13 p 124
Price Drops, July 5 p 142; Aug 23 p 146; Sept 6 p 178; Sept 13 p 152

Merrill Bros.:
Drum Opening Tool*, Dec 6 p 82

Mesta Machine Co.:
36-in. Mortar Developed*, Nov 22 p 113

Metal & Alloy Specialties Co., Inc.:
Casting Resin for Pattern Making*, Aug 9 p 73

Metal & Thermit Corp.:
Arc-Oxygen Electrode*, Oct 11 p 71
High Tensile Electrode Developed, Sept 27 p 57
Mineral-Coated Arc-Welding Electrode, Oct 11 p 71
Steel Castings Made by Thermit Process*, Aug 9 p 55

Metal Cleaning and Finishing:
(See Cleaning and Finishing)

Metallizing:
(See Cleaning and Finishing)

Metallizing Co. of America:
Spray Gun*, Aug 23 p 83

Metallizing Engineering Co., Inc.:
Metallizing as a Production Process*, Dec 13 p 72
Spray Booths, Sept 13 p 73

Metallography of Alcoa 75S Alloy, by R. Keller*, Oct 4 p 64

Metallurgy:
Burr Describes Statistics Used in Correlating Data*, Oct 25 p 148
Metals Important in Forward Move of Technological Work, Dec 27 p 116
(See also Nonferrous Metals; Steel)

Metallurgy of SAE 52100 Ball Bearing Steel, by Lt. R. J. Hafsten*, July 5 p 54

Metals, Finishes, and Finishing Processes, by Edward Engel, (4 Parts) Sept 6 p 70; Sept 13 p 64; Sept 20 p 74; Sept 27 p 65

Metro Tool & Gage Co.:
Chromium Plated Gages*, Aug 30 p 55

Metro-Vise Co.:
Metro Positioner*, Oct 25 p 71

Mexico:
Foundrymen's Group Formed and Approved, Dec 27 p 138
La Consolidada Plans Expansion in Rolling Mill and Ingot Output, Dec 27 p 80
Nash to Build Assembly Plant, Oct 18 p 78

Mica:
Corporations in Industry Indicted in Anti-Trust Violation, Sept 13 p 101
FEA Purchases to Cease by Year End, Sept 6 p 178

Michiana Products Corp.:
Alloy Fans*, Nov 15 p 79

Michigan Chrome & Chemical Co.:
Insulator for Plating Racks*, Sept 20 p 86

Michigan Tool Co.:
Gear Checker*, Dec 20 p 72

Micromatic Hone Corp.:
Buys Surplus Plant, Aug 30 p 60

Midland Steel Products Co.:
Third Quarter Loss, Nov 15 p 119

Midvale Co.:
Annual Report 1945, Nov 1 p 101

Mikulak, John:
Welded Construction Reduces Die Cost*, Oct 4 p 83

Military Equipment:
Army Shelters Ordered; Bids for 200,000 Out, July 12 p 93
How Vehicles Perform, July 5 p 121
Long-Time Storage Done by "Canning", Nov 8 p 121
More Portable Army Squad Shelters to Be Bought*, Aug 2 p 105
(See also Ordnance)

Miller, Roy A., and Tatman, M. E.:
Fabricating High-Strength Aluminum Alloys*, Dec 27 p 40

Millholland, W. K., Machinery Co.:
Indexing Machine*, Nov 29 p 68

Milling:
Automatic Machine, Kent-Owens Machine Co.*, Sept 27 p 69
Carbide Tipped Cutters, Nelco Tool Co.*, Sept 6 p 97
Cutter Design Evaluated by Production Runs*, Nov 22 p 54
Double Spindle Machines, W. H. Nichols & Sons*, Aug 9 p 76
Effect of Work Position in Face Milling*, (2 Parts) See reprint Jan. 24, 1946 p 64; Dec 13 p 64
Fin Milling Machine, Sundstrand Machine Tool Co.*, Aug 9 p 77
General Purpose Machine, Van Norman Co.*, Nov 29 p 66
Heavy Sections of 14ST Aluminum Alloy*, Oct 18 p 62
Hollow Milling Machine, Snyder Tool & Engineering Co.*, Sept 27 p 72
Horizontal Machine, Defiance Machine Works, Inc.*, Aug 9 p 78

Lathe Attachment, Globe Products Mfg. Co.*, Aug 30 p 54
Thread Miller, Pratt & Whitney Div.*, Aug 9 p 78
Thread Milling Cutters, Detroit Tap & Tool Co.*, Sept 6 p 97
Tool Engineers Advise Low Milling Speeds to Chicago Chapter, ASME, July 19 p 132
Vertical Machine, Reed-Prentice Corp.*, Aug 9 p 78
Vertical or Horizontal Machine, Fray Machine Tool Co.*, Sept 27 p 69
Vertical Turret Mill, Rogers Machine Works, Inc.*, Sept 27 p 69
(See also Machining)

Milne, A., & Co.:
Foreign Tool Steel Comparison Chart, Aug 2 p 48

Minerals:
Conservation of Resources Needs Better Approach, Nov 29 p 135
Pilot Plant to Study Concentration, Milling and Processing, Nov 29 p 138
Stockpiling Bill Reported On by Military Affairs Committee, Dec 13 p 86
Strategic Metals and Minerals Stocks, October 31, Dec 31 p 173
U.S. Reserves, Nov 29 p 74
Waggaman Warns of Raw Materials Depletion; Submits National Plan, Oct 18 p 146
Wartime Demands Have Depleted U.S. Supply, Oct 18 p 150

Mining:
Coal Mining Machinery on (cal List, July 26 p 113
Extra Food Rations for Miners, Aug 2 p 118
Foremen Union Case Decision to Be Handed Down Soon, Nov 1 p 97
Iron Ore Conservation Measures Offered to Krug by Van Slyke, Aug 16 p 147
Ural Metallurgical and Iron Mining Enterprises, 1941, Nov 29 p 107

Mitchell-Bradford Laboratories:
Rust Inhibiting Oil, Sept 20 p 85

Modern Products, Ltd.:
4-way Control Valve*, Nov 22 p 81

Moffett, L. W.:
Committee Recommends SPB Control Foreign Disposals, July 19 p 108
Long Awaited OPA Steel Price Action Is a Dud, Nov 29 p 95
McKee Co. Analyzes Geneva Steel Markets for RFC*, Nov 15 p 112
Trend of Strikes Seen Dictating Labor Legislation*, Dec 13 p 109

Molding:
Combination Press, F. J. Stokes Machine Co.*, Dec 27 p 62
Mechanized Coating of Ingot Molds*, Oct 18 p 61
Non-Siliceous Paints and Powders, Oct 18 p 53
Plastic Molding Press, French Oil Mill Machinery Co.*, Aug 2 p 72
Plastic Transfer Molding Press, Defiance Machine Works, Inc.*, Aug 2 p 72
Refractory Molds for Steel Castings*, Oct 11 p 62
Resinous-Base Plaster Mold Sealant, Aug 9 p 60
Sectional Carbide Molds Facilitate Recutting*, Oct 25 p 50
(See also Casting; Foundry)

Moline Tool Co.:
Hydraulic Feed Machine, Sept 27 p 71

Moll, Dan W.:
Wartime Advances in Technique Provide for Magnesium Future*, Nov 1 p 138

Molybdenum:
June Production Lowest Since Mid-1941, Aug 16 p 152

Monarch Governor Co.:
Vertical Jig*, Sept 6 p 98

Monarch Machine Tool Co.:
Earnings, First Half 1945, Sept 6 p 168

Monsanto Chemical Co.:
Plans Expansion, Sept 27 p 105

Monypenny, J. H. G.:
British EN Alloy Specifications, Nov 15 p 71

Moore, John, Specialty Co.:
Roller Conveyor*, Oct 4 p 87

Morganite Brush Co.:
Self-lubricating Bearings*, July 12 p 64C

Morrison, J. G.:
An Appraisal of Subzero Hardening of High Speed Steel*, (2 Parts) July 26 p 54; Aug 2 p 64

Moss, Richard Y.:
Dimensional Control to Millionths*, Oct 4 p 79

Moto-Mower Co.:
Sweeping Unit*, Sept 13 p 74

Motors:
Direct Current, Kato Engineering Co.*, Nov 22 p 79
How to Protect Motor and Machine Components*, Oct 18 p 64
Pressure Cast Rotors*, Nov 22 p 119
Protected Type, Crocker-Wheeler Div.*, Nov 22 p 80
Twin-Motor Drives in Hot Reducing Mills*, Oct 11 p 58
Vertical Dripproof, Crocker-Wheeler Div., Oct 18 p 74
(See also Plant Equipment)

Moving the Pembroke Blast Furnace From Florida to Texas, by R. H. Sweetser*, Nov 15 p 66

Munton Mfg. Co.:
Hydraulic Presses*, Dec 27 p 63

Murray, Edward L.:
Selection and Use of Diamond Tools*, (2 Parts) Aug 30 p 38; Sept 6 p 94

N

Narcus, Harold:
Electrodeposition of Metals on Plastics, Dec 13 p 58

Nash-Kelvinator Corp.:
Assembly Plant in Mexico Planned, Oct 18 p 78
Expansion Program, Sept 6 p 174
Propeller Output Reduced Sharply, July 12 p 98

National Acme Co.:
Net Income Up in Second Quarter, Aug 16 p 150; Third Quarter, Nov 15 p 168

National Assn. of Manufacturers:
Condemns Bills for Compulsory Licensing of Patents, Nov 8 p 138

National Broach & Machine Co.:
Automatic Roto Shaving for Fine Surfaces*, Dec 27 p 56
Internal Gear Shaver*, Nov 29 p 67
Shaving Machine*, Aug 9 p 77

National Bureau of Standards:
Interferograph Developed for Measuring Minute Dimensional Changes, Oct 18 p 63
Simplified Practice Recommendation Proposed to Band Saws Producers, Nov 1 p 149

National Carbon Co.:
Halts Naval Plant Conversion, Aug 16 p 126

National Emergency Steel:
SAE Moves to Add Some to Standard Listings, Nov 15 p 119
(See also Steel)

National Engineers Committee:
Five-Point Program for Control of German Industry*, Oct 11 p 122

National Industrial Conference Board:
Employment, Hours, and Wages, April, July 12 p 100

National Labor Relations Board:
New Union Election Setup, Dec 6 p 122
Republic Steel's Request to Dismiss Strike Vote Petition Turned Down, Nov 15 p 86
Wants Labor Disputes Act Repealed, Nov 22 p 88

National Machine Tool Builders' Assn.:
Urge More Goods for More People at Less Cost*, Nov 1 p 102

National Radiator Co.:
Veterans' Employment Program Established, Aug 16 p 104

National Screw Machine Products Assn.:
Members Unable to Buy Surplus Machines in Quantity, Oct 11 p 106

National Steel Corp.:
Earnings, Third Quarter, Nov 15 p 168
Reduces Indebtedness, Aug 2 p 120
Weir Refutes USWA Statistics in Report to Employees, Nov 22 p 110

National Tool & Die Manufacturers Assn.:
Officers Elected at Meeting, Oct 18 p 110

National Tube Co.:
Byproduct Coke Works Expanded, Oct 4 p 134
Lorain Facilities for Buttweld Pipe to Be Expanded, Oct 18 p 100
Mechanized Coating of Ingot Molds*, Oct 18 p 61
Strikes Affect Operations, Sept 27 p 97
Tap Carbon Tests Speeded Up by Novel Procedure*, July 12 p 110

National War Labor Board:
Folds Up; Labor Dept. Will Handle Disputes, Nov 1 p 78
Labor-Management Dispute Conciliation Steps Outlined, Sept 6 p 131
Leaves U.S. Steel Severance Pay Disagreement to Collective Bargaining, Nov 22 p 110
Merit Increase Plan Ordered at Harvester, July 26 p 141
Steel Commission at Pittsburgh Makes New Wage Rulings, July 19 p 104
Transferred to Labor Dept., Oct 4 p 130
(See also Labor)

National Welding Supply Assn.:
Organized to Encourage Cooperation, Dec 27 p 137

Naval Ordnance Materials Handling Laboratory:
Versatile Stowage With Eight-way Pallets*, Aug 30 p 34

Navy Dept.:
Air Technical Training Fills Vocational Education Vacuum*, Sept 27 p 104
Cancellations on Planes, Weapons, Ships Reach $7 Billion, Aug 23 p 120
Deadline for Clearing Contracts Set for New Year's Day, Sept 13 p 84
Eastern Aircraft Signs Pretermination, July 12 p 93
Industry Technicians Form Integral Part of Operations, Sept 6 p 142
Moisture-Proof Covering to Protect Matériel*, Nov 29 p 105
Retains Canton Ordnance Plant, Nov 22 p 112
Termination Claims Now Most Important Task of Contractors, Sept 20 p 152

Nelco Tool Co.:
Carbide Tipped Milling Cutters*, Sept 6 p 97

Nelson Specialty Welding Equipment Corp.:
Stud Welder*, July 19 p 72

New Heat-Treat Neutralizing Chemical, by W. M. Sutherland*, Oct 4 p 82

New Jersey Jewelers' Supply:
Welding Tweezers*, Oct 11 p 74

New Method Steel Stamps, Inc.:
Individualized Stamps*, Dec 20 p 68
New Method of Producing Embossing Dies*, Oct 4 p 68

New Wrinkle, Inc.:
Synthetic Resin Finish, Sept 20 p 85

Newcomer Products:
Cemented Carbide Tools, Sept 6 p 99

Nicholas-Morris Corp.:
Angle Dresser*, Dec 20 p 70

Nichols, W. H., & Sons:
Double Spindle Milling Machines*, Aug 9 p 76

Nicholson File Co.:
Rotary File Kit*, Dec 20 p 72

Nickel:
Canadian Controls Lifted, Aug 9 p 136
Imports, 1944, Oct 18 p 112
Industry Girds for Peace With New Products, Sept 6 p 126
International Nickel of Canada Cuts Production, Nov 22 p 126
Less Critical, Stainless Mills Told, July 12 p 134
Open-Ended, Aug 23 p 146
Spot Test for Nickel in Steel, Sept 13 p 54 O
Use High, Dec 20 p 116

Nock, J. A., Jr., Hobbs, M. A., and Fink, Dr. W. L.:
Aging of 75S Aluminum Alloy, Nov 1 p 64

Nonferrous Metals:
British Wartime Consumption, July 26 p 146
Canada's Cobalt Supply, Oct 25 p 110
Chromium Indium Released From Control, Aug 23 p 146
Hard Facing Metal, Fanstel Metallurgical Corp., July 19 p 73
Murray Outlines Operation of Premium Price Quota Committee in Report, July 26 p 109
Reconversion Metals Stockpiled, Nov 1 p 108
Silicon Price Ruling, Aug 2 p 134
Tin, Manganese and Copper Shrinkages in Strategic Stocks, Dec 13 p 173
Tungsten and Molybdenum Eased, Aug 9 p 106
Zinc, Cadmium, Bismuth Supplies Ample, Aug 30 p 100
WPB Estimated 1945 Requirements, July 19 p 78

Nonferrous Metals, Forming and Shaping:
Drawing and Ironing ½-in. Magnesium Plate*, July 5 p 74
Hot Forming Magnesium Alloy Sheet*, Aug 16 p 56

Nonferrous Metals, Metallurgy:
Early Aluminum Alloys From British and German Airships*, Dec 27 p 51
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Metallography of Alcoa 75S Alloy*, Oct 4 p 64
New Bearing Alloy Conserves Tin*, Nov 29 p 64
Porosity in Navy G and M Metals and Red Brasses*, Nov 15 p 68
Precision-Cast Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64

Nonferrous Metals, Production:
Caspian Area Large Producer, Nov 22 p 126
Sweden, 1936-41, Dec 13 p 124

Nonferrous Metals, Treatment:
Aging of 75S Aluminum Alloy, Nov 1 p 64
Alrok Treatment of Aluminum Alloy Castings Avoids Masking Cast-in Inserts, Oct 11 p 69
Effect of Delayed Quench, (Erratum, May 24, 1945) July 5 p 139
Fabricating High-Strength Aluminum Alloys*, Dec 27 p 40
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Influence of Overaging on Aluminum Alloys, July 19 p 66

Nonferrous Metals Industry:
Brass Mill Advisory Committee Named by OPA, Nov 15 p 126
British Light Alloy Company, Almin, Ltd., Formed, Dec 20 p 116
British Markets Open, July 19 p 146
Light-Metals Plants Disposal Plan Presented, Sept 13 p 105
Market Estimates in 1947, Aug 23 p 61
Producers Consider Premium Position, Aug 30 p 100
Status of DPC Metal Working Plants, Oct 4 p 114
Strategic Materials Stockpile Figures Released by Metals Reserve, Nov 22 p 126
Truman Pledges Action on Premiums at War End, July 12 p 104

Norris, K. T.:
Loose Talk on West Coast Steel Situation Decried, Nov 8 p 102
Suggests Boycotting Eastern Steel Interests, Aug 30 p 66

Norris Stamping & Mfg. Co.:
Prepares to Enter Equipment Field With National Distribution, Dec 20 p 82

North American Aviation, Inc.:
Photo-Grid Techniques for Measuring Distortion*, Nov 8 p 78
Shot Peening Effect on Aluminum*, Dec 27 p 45

North American Electric Lamp Co.:
Carbon Filament Lamps, Sept 20 p 86

North American Philips Co., Inc.:
Geiger-Muller Tube*, Nov 1 p 70

Northrop Aircraft, Inc.:
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Influence of Overaging on Aluminum Alloys, July 19 p 66
Steel Castings Replace Forgings*, Nov 1 p 50

Northwest Chemical Co.:
Drawing Compound*, Dec 27 p 63

Northwest Steel Rolling Mills, Inc.:
Labor Stoppages Hamper Production, July 26 p 94

Norway:
Supplies to Norway Are Increasing, Aug 16 p 86

Nu Products Co.:
Lead Hammer, Dec 20 p 70

Numatics:
Fluid Lever Valve*, Aug 23 p 82

O

Office of Defense Transportation:
Export Permits Dropped, Oct 11 p 97
Getting Most of Needed Materials Under Final CMP Allocations, Aug 16 p 104D

Office of Metals Reserve:
Strategic Materials Stockpile Figures Released, Nov 22 p 126
Tin, Manganese and Copper Shrinkages in Strategic Stocks, Dec 13 p 173

Office of Price Administration:
Bowles Makes Reply to House Criticisms, Nov 1 p 105
Brass Mill Advisory Committee Named, Nov 15 p 126
House Report Criticizes Pricing Policies; Recommends Changes, Nov 1 p 105
Illegal Price on Washing Machines by Electric Household Utilities, Sept 6 p 164
Invoicing Changes Made, Nov 8 p 92
Merges Iron and Steel and Nonferrous Price Section in One Branch, July 12 p 96
New Postwar Price Policy for Machinery, Dec 6 p 111
Non-Integrated Firms Protest Methods on Price Maximums, Aug 9 p 104
Price Control for Dismantling War Plants Exempt, Oct 11 p 97
Price Controls Relaxed on Many Industry Items, Sept 6 p 134
Price Program Approved for Industry, Aug 30 p 84
Price Regulation MPR 594 Governing New Passenger Cars, Sept 13 p 80
Projects Meetings on Steel Price Action, Dec 6 p 122
Reconversion Price Program*, Aug 30 p 89
Steel Price Action Is a Dud, Nov 29 p 95
Wage-Price Formula Will Not Affect Steel Price Increases, Nov 8 p 107
Warns Controls on Major Items Will Not Be Lifted Yet, Aug 9 p 102

Office of Surplus Property:
Transferred to RFC, Nov 1 p 105

Office of War Mobilization and Reconversion:
Snyder Predicts 8 Million Unemployed, Oct 11 p 118
Snyder Report Admits Changes to Result in Temporary Unemployment, Aug 23 p 107
Western Governors Exerting Pressure for Resident Director, Sept 6 p 110

Ohio Crankshaft Co.:
Induction Heating of Small Parts*, Sept 27 p 60

Oil:
Cutting and Drawing Oils and Their Solvent Removal, Sept 6 p 77
Diesel Fuel Oil Additive, Hood Refining Co., Aug 16 p 77
PAW Drops Some Controls, Oct 4 p 114
(See also Coolants)

Oil-Rite Corp.:
Drop Feed Oiler*, Sept 13 p 73

Oldfield, J. H., and Convey, J.:
Micro-Spectrographic Method for Steel Segregates, Dec 13 p 63

Olin Industries, Inc.:
Consolidates Brass Mill Facilities for Postwar Market*, Sept 6 p 132
Will Not Lease or Buy Tacoma Plant*, Nov 29 p 110

O'Neil-Irwin Mfg. Co.:
Benders*, Sept 13 p 74

Operation of 4-Ton Openhearth, by H. K. Work and W. R. Webb*, Aug 2 p 42

Optimus Detergent Co.:
Detergents, Sept 20 p 84
Pre-Cleaner and Deoxidizers, Dec 13 p 80

Optimus Equipment Co.:
Rinsing and Drying Machine*, Dec 13 p 80
Wash and Rinse Unit, Aug 23 p 84

Ordnance:
American Car & Foundry to Halt 8-in. Shell Output, July 12 p 100
Assn. Sets Forth Program to Safeguard Nation, Nov 8 p 156
Bullet Core Work Stopped by Army, July 19 p 98
Canning of Equipment Required Half Million Tons of Steel, Aluminum*, Aug 16 p 104F
Cartridge Cases Offered, Dec 6 p 126
Cutbacks Take Shape; Construction Activity Ordered Halted, Aug 16 p 107
Detroit's Part in Automotive Ordnance Production, Sept 6 p 104
Fisher Body Tank Arsenal Shuts Down, Oct 18 p 104
General Somervell Pays Tribute to Teamwork With Industry, Nov 1 p 76
Helmets Modified and Reclaimed on Big Scale in Indiana, Aug 16 p 128
Incendiary Bombs Scheduled for Japan, July 12 p 112
Moisture-Proof Covering to Protect Navy Matériel*, Nov 29 p 105
Munitions Monthly Production in 1944 Equals $5 Billion, July 12 p 91
Navy Retains Canton Plant, Nov 22 p 112
Navy to Operate Canton Ordnance, Oct 4 p 117
Pittsburgh Mills Double Jap Production, Aug 23 p 126
Powder Plants Close, Aug 23 p 124
"Salvageable" Ammunition Dumped in Lake as Safety Measure, Oct 25 p 78
Shell Packing Device Saves Money, Gets Award, July 19 p 130
Supersonic Wind Tunnel Built by Pittsburgh-Des Moines Steel Co., Aug 2 p 130
Surplus Material Identification*, Oct 18 p 53
36-in. Mortar, Powerful Assault Weapon, Revealed by Army Ordnance*, Nov 22 p 115
(See also Military Equipment)

Ore, Ferrous:
Australian Iron Ore Mountain Estimated to Contain 100 Million Tons*, Sept 20 p 119
Bethlehem Steel Stockpiles Wartime Ore Reserves From Chile, Nov 1 p 100
Consumption of Lake Ore, June, July 26 p 103; July, Aug 30 p 82; August, Oct 11 p 98; September, Nov 1 p 91; October, Nov 29 p 93; November, Dec 27 p 87
Deposits in Oregon, Dec 20 p 97
Iron Ore Concentrated by Flotation Methods, July 12 p 63
Iron Output in Czechoslovakia Rising, Oct 4 p 115
Lake Shipments, July, Aug 16 p 138; November and Cumulative for Season, Dec 13 p 114
Mechanical Car Unloader, Oct 25 p 64
Mesabi Taconite Sinter Costs Set at $6, Dec 13 p 174
Mining Engineer Van Slyke Offers Conservation Measures to Krug, Aug 16 p 147
Pilot Plant to Study Concentration, Milling and Processing*, Nov 29 p 138
Rapid Testing, Nov 29 p 63
Shipments From Steep Rock Mine Completed, Nov 22 p 123
Steep Rock Output to Exceed 1000 Tons Daily in Near Future, Sept 6 p 125
U.S. Reserves, Nov 29 p 74

Ore, Nonferrous:
Antimony Ore Shortage, Oct 4 p 164
Brazilian Magnesite Deposits Thought Large, Sept 13 p 152
Pilot Plant to Study Concentration, Milling and Processing*, Nov 29 p 138
Tin Buying Mission in Malaya, Nov 22 p 126

Oregon Steel Mills:
Land $2 Million Cash Order to France and Russia, Nov 15 p 90

Ovens:
Flexible Infra-Red Drying Installation*, Aug 2 p 63

P

Pacific States Steel Co.:
Gilmore Interest Bought by American Forge Co., Oct 25 p 82

Packaging:
(See Containers)

Packard Motor Car Co.:
Details of 1946 Model*, Oct 25 p 76
Protests UAW's Covering Overtime Notices, Aug 2 p 76

Page, Franklin H., Jr.:
Weldability Factors for 18-8 Stainless, Dec 27 p 58

Palmer-Shile Co.:
Easy-Loading Trailer*, Oct 4 p 86
Multi-purpose Cart*, Aug 23 p 84
Stock Checker's Truck, Oct 4 p 88
Toggle Type Barrel Cradle*, Oct 4 p 88
Welders' Truck*, July 19 p 73

Park Chemical Co.:
Parts Cleaning Machine, Sept 13 p 74
Portable Cleaning Machine, Nov 8 p 83

Patents:
Alien Patent Seizure Yields $150 Million in American Products, July 19 p 136
NAM Condemns Bills for Compulsory Licensing of Patents, Nov 8 p 138
Ooms Urges Creation of Patent Courts for Complicated Problems, Dec 27 p 122

Pattison, D. M.:
Ideas on the "Lost Art" of Small-Lot Production*, Sept 27 p 108

Pedrick Tool & Machine Co.:
Universal Bender for Pipes and Shapes*, Dec 27 p 50

Peening:
Shot and Grit Standards, Sept 13 p 54P
Shot Peening Effect on Aluminum*, Dec 27 p 45

Peer, Harold Melville:
Wire Fencing May Prove Useful for Grain Storage Bins*, Aug 2 p 107

Pellowe, E. F., and Pollak, F. F.:
Welding Galvanized Steel*, Nov 15 p 64

Pennsylvania Salt Mfg. Co.:
Acid Cleaner, Sept 20 p 85

Perfection Gear Co.:
WLB Orders Shift Premium, Nov 22 p 121

Pesco Products Co.:
Fuel Booster Pump Raises Aircraft Engine Power, Aug 16 p 149
Hydraulic Pump*, Oct 18 p 74

Phelps Dodge Copper Products Corp.:
Builds Midwestern Wire Mill, Sept 13 p 146

Phillips Mfg. Co.:
Plastic Dip Tank*, Sept 20 p 85

Phillips Mine & Mill Supply Co.:
Hidden-Arc Welding of 13-Gage Steel*, Nov 1 p 52

Phosphate:
(See Cleaning and Finishing)

Piezoelectric Corp.:
Universal Link Joint*, Nov 22 p 80

Pig Iron:
Brazil's Production Grows, Oct 4 p 115
Canadian Production, May, July 12 p 85; June, Aug 16 p 148; August, Oct 18 p 104; September, Nov 22 p 121; October, Dec 13 p 114
Canadian Production, 1923-45, Dec 13 p 114

CPA Cites Violations in Industry, Dec 20 p 102
India Price Higher Than Prewar, Dec 13 p 140
Kaiser Protests Sale From Government-Owned Geneva, Dec 20 p 84
Kuznetsk (Russia) Wartime Production Increase Reported, Dec 20 p 100
Prices Increased 75¢ Per Ton, Oct 25 p 104
Production by Districts, June, Aug 9 p 151; July, Sept 6 p 125; August, Oct 11 p 107; September, Nov 1 p 101; October, Dec 6 p 119
Sweden Seeking New Production Methods Due to Costs, July 5 p 122
World's Blast Furnace Record Made in July, Aug 9 p 99
(See also Iron)

Pines Engineering Co.:
Rotary Cut-Off Machine, Sept 27 p 72

Pipe, Tubes:
Assistance Given to Increase Output of Cast Iron Soil Pipe, Oct 11 p 112
Bessemer Steel for High Pressure Steam Piping, Dec 27 p 44
Cast-Iron Foundries Increase Soil Pipe Output for Housing, Dec 6 p 116
Cast Iron Soil Pipe Price Ceiling Boosted, Sept 6 p 131
Cast Iron Soil Pipe Production, Dec 6 p 90
Ceilings on Oil Country Tubular Goods in California Raised, Oct 18 p 86
National Tube Expanding Lorain Facilities for Buttweld Pipe, Oct 18 p 100
Soil Pipe and Fittings Ceiling Prices Raised, July 5 p 118
Wage Increase to Soil Pipe Industry, Aug 16 p 86
Wage Increases Approved in Cast Iron Soil Pipe Industry, Dec 27 p 98

Piper, T. E., and Bromhead, E. B.:
Steel Castings Replace Forgings*, Nov 1 p 50

Pittsburgh Consolidation Coal Co.:
Merger Forms Nation's Largest Bituminous Producer, Dec 13 p 154

Pittsburgh-Des Moines Steel Co.:
New Type Supersonic Wind Tunnels Built, Aug 2 p 130

Pittsburgh Equitable Meter Co.:
Changes Name to Rockwell Mfg. Co.*, Dec 20 p 134

Pittsburgh Steel Co.:
High Amortization Puts Company in Red for Third Quarter, Dec 13 p 150

Plant Equipment:
Air Blow Gun, Heckethorn Mfg. & Supply Co., Nov 8 p 82
Air Compressor, Jaeger Machine Co., Aug 16 p 76
Air Filter Cleaner, Turco Products, Inc., Aug 23 p 84
Air Filters, Electronic, American Air Filter Co.*, Dec 6 p 84
Air Heaters, Portable, Electric Air Heater Co., Aug 16 p 76
Anti-fog for Lenses, Face Shields and Welding Plates, American Optical Co.*, Oct 11 p 74
Axial-Flow Compressor, Buffalo Turbine Corp.*, Sept 13 p 73
Balancer, Globe Tool & Engineering Co., Aug 16 p 78
Bench Bins, Gordon L. Hall Co.*, Nov 8 p 83
Bimetallic Dial Thermometer, Equipose Controls*, Dec 6 p 82
Cathodic Protection Rectifiers, Federal Telephone & Radio Corp.*, Aug 23 p 83
Circulator, Ruthman Machinery Co.*, Aug 23 p 82
Cleaning Machine, Portable, Park Chemical Co.*, Nov 8 p 83
Disintegrator, Franklin McAllister Corp.*, Aug 16 p 78
Door Unit, Clark Door Co., Inc.*, Nov 8 p 82
Drawing Board, Binkins Tool & Mfg. Co.*, Nov 8 p 84
Drop Feed Oiler, Oil-Rite Corp.*, Sept 13 p 73
Drum Opening Tool, Merrill Bros.*, Dec 6 p 82
Dust and Spray Hoods, Industrial Products Co.*, Nov 8 p 84
Dust Collector, Aget-Detroit Co., Aug 16 p 76
Dust Collector, Leiman Bros.*, Dec 6 p 83
Ear Protectors, Universal Safety Equipment Co.*, Aug 23 p 84
Electric Immersion Heaters, Edwin L. Wiegand Co.*, Aug 23 p 83
Electric Unit Heaters, Electric Air Heater Co., Aug 16 p 76
Fan and Blower Bearing, Dodge Mfg. Co.*, Aug 23 p 84
Finger Guard, Industrial Gloves Co.*, Dec 6 p 84
Fire Extinguisher, American-La-France Foamite Corp., Sept 13 p 74
Fire Extinguisher, Walter Kidde & Co.*, Aug 16 p 77
Flame-Cut Cinder Car Rack*, Nov 1 p 49
Flexible Stainless Hose, Carpenter Steel Co.*, Sept 13 p 72
Floor Coating, Non-Skid, Stonhard Co.*, Nov 8 p 82
Floor Sweeper, Magnetic, Sjostrom Co.*, Nov 8 p 82
Fluorescent Lampholder, General Electric Co., Sept 13 p 72
Foot Control, Redmer Air Devices Corp.*, Nov 8 p 83
Goggle Station and Cleaner, Allen Optical Co., Sept 13 p 75
Goggles, Acetate Safety, American Optical Co.*, Aug 16 p 78
Handy Container, Kindt-Collins Co., Dec 13 p 80
Hydraulic Packing, Weatherhead Co., Aug 16 p 77
"Insulating" Welding Gloves, Graham-Paige Motors Corp.*, July 5 p 77
Junction Box, Jefferson Electric Co.*, Nov 8 p 82
Locomotive, 600 Hp, for Yard Duty, General Electric Co., Aug 16 p 76
Lubrication Cart, Stewart Warner Corp.*, Sept 13 p 75
Magnetic Separator, Dings Magnetic Separator Co., Sept 13 p 73
Metallizing Gun, Metallizing Co. of America*, Aug 23 p 83
Molded Silastic Parts, Connecticut Hard Rubber Co., Sept 13 p 74
Mousing Tool, Copperweld Steel Co.*, Sept 13 p 73
Multi-purpose Cart, Palmer-Shile Co.*, Aug 23 p 84
Oil Mist Collector, American Air Filter Co.*, Sept 13 p 75
Parts Cleaning Machine, Park Chemical Co., Sept 13 p 74
Pipeline Strainer, J. S. Zurn Mfg. Co.*, Nov 8 p 84
Plastic Eyeshield, Wilson Products, Inc., Sept 13 p 75
Plastic Gasket Material, Flexrock Co., Aug 16 p 77
Plastic Pipe Seals, American Molded Products Co.*, Aug 16 p 77
Portable Scaffold, Universal Fittings & Scaffolding Co., Aug. 16 p 78
Portable Washing Machine, Industrial Washing Machine Corp.*, Sept 13 p 74
Power Booster, Talk-A-Phone Mfg. Co., Dec 6 p 83
Prefabricated Metal Sheets, Lindsay & Lindsay, Aug 23 p 83
Pressure Gage Tester, Mansfield & Green*, Aug 23 p 84
Pressure Switch, Walter Kidde & Co.*, Sept 13 p 74
Propeller Type Fan, Trane Co., Aug 23 p 84
Protective Roof Coating, A. C. Horn Co.*, Aug 23 p 83
Pump, All Purpose, Marco Co., Inc., Aug 16 p 78
Pump, Gearless, Eco Engineering Co.*, Nov 8 p 84
Pump, High Pressure, Martin Wells*, Dec 6 p 84
Pump, High Pressure, Precision Scientific Co.*, Aug 23 p 82
Pump, Suction, Alden Spear's Sons Co., Aug 23 p 82
Pumps, Screw, Quimby Pump Co.*, Dec 6 p 84
Rubber Machinery Mounting, Bushings, Inc.*, Dec 6 p 81
Safety Apron, Standard Safety Equipment Co.*, Aug 23 p 84
Safety Blocks of Extruded Magnesium*, Nov 1 p 63
Safety Device, Flexible, Dilley Mfg. Co.*, Nov 8 p 84
Safety Gloves, American Optical Co.*, July 19 p 74
Safety Spectacles, Willson Products, Inc.*, Aug 16 p 78
Safety Vents, F. A. Zurn Mfg. Co.*, Dec 6 p 81
Shock Absorbing Lamps, General Electric Co.*, Sept 13 p 72
Skid Box Pallet, Elwell Parker Electric Co.*, Aug 23 p 83
Spray Booths, Metallizing Engineering Co., Sept 13 p 73
Static Balancer, Samuel S. Gelber*, Aug 30 p 56
Steel Stools, Lyon Metal Products, Inc.*, Dec 6 p 83
Strainer, Strainer Products Corp.*, Sept 13 p 73
Strainer, Magnetic, Winslow Engineering Co.*, Aug 30 p 56
Strainer Sleeve, J. A. Zurn Mfg. Co.*, Dec 6 p 81
Sweeping Unit, Moto-Mower Co.*, Sept 13 p 74
Tank Preheater, Remp Co., Nov 8 p 84
Temperature Regulator, Leslie Co.*, Dec 6 p 83
Testing Machine, Baldwin Locomotive Works, Aug 16 p 76
Thermostatic Expansion Valve, Tenney Engineering, Inc.*, Nov 8 p 83
Truck Battery Charger, Electric Products Co.*, Aug 16 p 76
Vacuum Cleaners Eliminate Chip Interference*, Nov 8 p 77
Ventilating Hose, American Ventilating Hose Co.*, Nov 8 p 83
Wash and Rinse Unit, Optimus Equipment Co., Aug 23 p 84
Wire Strapper Glove, Industrial Gloves Co., Aug 16 p 78
Work Bench, Aurora Equipment Co., Sept 13 p 75

Plastic Tooling Procedure, by E. L. Maris*, (2 Parts) July 19 p 55; July 26 p 74

Plastics:
Casting Resin for Pattern Making*, Aug 9 p 73
Coating Compound, Eronel Industries*, Sept 20 p 85
Color Glue for Bonding Plastics, Krieger Color & Chemical Co., Sept 20 p 86
Conolon, A High Strength Plastic Laminate*, July 12 p 62
Deflectometer, Baldwin Locomotive Works*, Nov 1 p 68
Dip Tank, Phillips Mfg. Co.*, Sept 20 p 85
Dow Announcing New Polystyrene Product, Aug 16 p 136
Dyeing Compound, Krieger Color & Chemical Co., Sept 20 p 86
Electrodeposition of Metals on Plastics, Dec 13 p 58
Form Dies of Resin Impregnated Plaster*, Nov 22 p 72
Gasket Material, Flexrock Co., Aug 16 p 77
Kriston, Newest Thermoset Plastic, B. F. Goodrich Chemical Co., Sept 13 p 144
Molded Silastic Parts, Connecticut Hard Rubber Co., Sept 13 p 74
Pipe Seals, American Molded Products Co.*, Aug 16 p 77
Plastic Surface Sprayed on Aluminum Sheets in British Housing Plan*, Nov 8 p 119
Plastic Tooling Procedures*, (2 Parts) July 19 p 55; July 26 p 74
Precision Casting With Polystyrene Patterns*, Nov 15 p 54
Radar Housing, Largest Molded Plastic Product*, Sept 13 p 110
Resinous-Base Plaster Mold Sealant, Aug 9 p 60
Synthetic Resin Finish, New Wrinkle, Inc., Sept 20 p 85

Plates, Sheet and Strip:
Armor Plate Freight Rates Modified, Nov 29 p 93
Blackplate Ruling on Canning Quotas, July 26 p 90
Carnegie-Illinois to Produce Silicon Strip in Coils at Irvin Works, Nov 15 p 109
Cuts on Shell Components and Containers to Release Sheet Steel, July 5 p 107
Drawing and Ironing ½-in. Magnesium Plate*, July 5 p 74
Edge Preparation of Ship Plate*, Sept 13 p 60
Flat Rolled Steel Business Continues to Be Very Heavy, Aug 2 p 98
Gilded Metal Becomes Surplus Materials, July 19 p 101
ICC Orders Reduction of Freight Rates for Armor Plate and Shapes, Sept 20 p 161
Inventory Limit Cut to 45 Days, July 5 p 104
Magnetic Holddown Chucks Facilitate Plate Welding*, July 19 p 68
Production Lag Dims Civilian Prospects, Aug 9 p 105
Quality of Terneplate, Dec 27 p 44
Stough Urges New Techniques in Output of Light Steel to Expand Use, Nov 8 p 115
Thomas Plate Edger Prepares Steel for Automatic Welding, Nov 8 p 146
Twin-Motor Drive in Hot Reducing Mills*, Oct 11 p 58
WPB Four-Point Program Attempts to Combat Tight Flat-rolled Situation, July 12 p 87
WPB Freezes Third Quarter Mill Order Books, July 12 p 87
WPB Program to Increase Output to Face Tough Sledding; Manpower to Be Factor, July 19 p 80
Warehouse Return on Galvanized Sheets Raised, Dec 6 p 123
Weirton Installing Cold Reduction Mill, July 12 p 89

Plating Processes Corp.:
Electrodeposition of Metals on Plastics, Dec 13 p 58

Platinum:
Canada Releases Platinum Group Metals, July 5 p 142

Pollak, F. F., and Pellowe, E. F.:
Welding Galvanized Steel*, Nov 15 p 64

Porcelain Enamel Institute:
Officers Elected, Nov 15 p 176
Producers Set Sales for Peak Era, Nov 8 p 114

Porosity in Navy G and M Metals and Red Brasses, by W. B. George*, Nov 15 p 68

Porter-Cable Machine Co.:
Portable Sander-Grinder*, Sept 20 p 85

Portman Machine Tool Co.:
Hydraulic Speed Transmission*, Oct 18 p 72

Post, Charles T.:
Far-Reaching Steel Freight Rate Changes Agitated*, Nov 29 p 97
High Farm Income Creates 1 Yr to 2 Yr Sustained Demand*, Oct 25 p 100
Precision Casting With Plastic Patterns*, Nov 15 p 54
Time Allowances for Drill-Press Work*, Sept 20 p 58

Postwar Planning:
Allegheny-Ludlum to Expand, Sept 6 p 112
Aluminum Marketing Revolves Around Cost and Volume, Sept 6 p 129
Construction Projects Totaling 99,638 to Cost 15 Billions After War, July 5 p 111
Cost and Research Open New Fields to Magnesium Products, Sept 27 p 120
Cracking the War Agency Front May Require Major Invasion, Aug 23 p 90

Ideas on the "Lost Art" of Small-Lot Production*, Sept 27 p 108
Industry Estimates 1947 Markets, Aug 23 p 58
Munition's Board Gets Next Conflict Planning Duties, Sept 13 p 140
Nickel Industry Girds for Peace With New Products, Sept 6 p 126
Olin Consolidates Brass Mill Facilities for Postwar Market*, Sept 6 p 132
Peacetime Economy Program Mapped by President, Sept 13 p 104
Reynolds Charts Postwar Aluminum Developments, Sept 13 p 102
Standby Program for Aircraft Plants Proposed by AAF, July 26 p 136
Steel to Hold Its Position in Postwar Period, Sept 20 p 120
Wallace Program Will Revitalize Commerce Business Functions, Sept 27 p 102
Westinghouse's Plans Are Detailed by A. W. Robertson, Aug 23 p 121

Potter Instrument Co.:
High-Speed Counter*, Dec 20 p 70

Powder Metallurgy Precision Parts, by R. Hradecky and R. P. Seelig*, Sept 27 p 50

Powdered Metals:
Effect of Production on the Properties of Iron Powder Compacts, Aug 16 p 55
Electrolytic Iron Pilot Plant Output, Dec 27 p 135
Ferrocart Corp. and Micro Products Merge, July 12 p 126
German Cemented Carbide Industry*, Aug 30 p 36A
Magnetic Iron Powders*, Sept 27 p 50
Precision Parts*, Sept 27 p 50
Sectional Carbide Molds Facilitate Recutting*, Oct 25 p 50
Sintered Beryllium for X Ray Tube Windows*, July 26 p 68

Power Transmission:
Adapters for Solderless Connectors, Aircraft-Marine Products, Inc., Oct 18 p 73
Air-Actuated Disk Clutch, Twin Disc Clutch Co.*, July 12 p 64C
Alcoa Obtains Orders for High Voltage Line, July 26 p 146
Atomic Power Plant Seen as Possibility Within Ten Years*, Oct 18 p 171
Auto-Switch Capacitor, General Electric Co.*, July 12 p 64D
Bank-Type Resistor, Techtmann Industries, Inc.*, July 12 p 64D
Cable Connectors, Yarco Distributors, Oct 18 p 73
Circuit Breaker, Square D Co.*, Nov 22 p 80
Combination Starter, Electric Controller & Mfg. Co.*, July 12 p 64D
Connector Strips, Aircraft-Marine Products, Inc., Nov 22 p 82
Convertible Contactors, Square D Co.*, Oct 18 p 73
Direct Current Motors, Kato Engineering Co.*, Nov 22 p 79
Dravo Corp. Builds Spillway Gates for Project in Uruguay, Nov 22 p 122
Electric Energy Needs Hit New Peak, Aug 16 p 138
Foot-Operated Hytool for Installing Hydents, Burndy Engineering Co., Inc.*, Oct 18 p 72
Foot Switch, General Control Co.*, Nov 22 p 80
4-way Control Valve, Modern Products, Ltd.*, Nov 22 p 81
Hand Tool for Indenting Electrical Connectors, Burndy Engineering Co., Inc.*, Oct 18 p 72
Heavy-Duty Voltage Regulators, R-B-M Mfg. Co.*, Nov 22 p 79
Hydraulic Power Package, Adel Precision Products Corp.*, Oct 18 p 73
Hydraulic Speed Transmission, Portman Machine Tool Co.*, Oct 18 p 72
Improved Magnetic Brake, Cutler Hammer, Inc.*, July 12 p 64C
Iron Core Magnetic Components, Federal Telephone & Radio Corp.*, Oct 18 p 74
Linear Power Actuators, Foote Bros. Gear & Machine Corp.*, Nov 22 p 81
Magnetic Relays, R-B-M Mfg. Co.*, Oct 18 p 74
Oil-tight Pushbuttons, Square D Co.*, July 12 p 64D
Ontario Plans Construction of Power Plant Project, Dec 27 p 134
Open End V-Belts, B. F. Goodrich Co., July 12 p 64C
Pneumatic Motor Brake, James L. Entwistle Co.*, Nov 22 p 81
Portable AC Test Set, General Electric Co., Oct 18 p 72
Portable Current Transformers, General Electric Co.*, Nov 22 p 82
Portable Test Set, General Electric Co., Nov 22 p 79
Protected Type Motors, Crocker-Wheeler Div.*, Nov 22 p 80
Reinforced Fabric Belts, Goodyear Tire & Rubber Co., Nov 22 p 82
Sealed Rectifiers, Federal Telephone & Radio Corp.*, Oct 18 p 74
Selenium Rectifiers, Radio Receptor Co., Inc.*, Oct 18 p 74
Shipshaw Is Defended by Alcan, Sept 27 p 130
Small Diameter Stator, Robbins & Myers, Inc.*, July 12 p 64D
Solderless Connector Strip, Aircraft-Marine Products, Inc., Oct 18 p 73
Solderless Terminals, Aircraft-Marine Products, Inc.*, Nov 22 p 79
Thrust Recorder, Hagan Corp.*, Nov 22 p 82
Transfer Type Trolley, Bulldog Electric Products Co.*, Oct 18 p 73
Universal Link Joint, Piezoelectric Corp.*, Nov 22 p 80
V-Belt Sheave, Dodge Mfg. Corp.*, Nov 22 p 81
Vertical Dripproof Motor, Crocker-Wheeler Div.*, Oct 18 p 74
Wire Belt Hooks, Bristol Co.*, July 12 p 64D

Praeg, Walter:
Automatic Roto Shaving for Fine Surfaces*, Dec 27 p 56

Pratt & Letchworth Co.:
Tank Casting Output Replaced by RR Order, July 12 p 90

Pratt & Whitney Div.:
Automatic Centering Machine*, Nov 29 p 66
Electrolimit Comparator*, Dec 20 p 70
Jig Borer, Sept 27 p 70
Large Thread Miller*, Aug 9 p 78
Vertical Gear Grinder*, Nov 29 p 67

Precision-Cast Copper-Base Alloys, by S. Lipson, H. Markus, and H. Rosenthal*, (2 Parts) Nov 1 p 46; Nov 8 p 64

Precision Casting With Plastic Patterns, by C. T. Post*, Nov 15 p 54

Precision Diamond Tool Co.:
Castweld Setting of Diamonds, Oct 25 p 70

Precision Founding, by Francis Dittmar*, (9 Parts) July 12 p 46; July 19 p 62; July 26 p 70; Aug 2 p 51; Aug 9 p 67; Aug 16 p 70; Aug 23 p 74; Oct 11 p 62; Nov 22 p 68

Precision Scientific Co.:
Aging Bath*, Nov 1 p 70
Electronic Titrometer*, Nov 1 p 70
High Pressure Pump*, Aug 23 p 82

Precision Welder & Machine Co.:
Precision Spot Welder*, Oct 11 p 71

Press Work:
500,000,000 Stampings With Carbide Dies*, Aug 30 p 36
New Threading Technique*, Sept 27 p 59
Time Allowances for Drill-Press Work*, Sept 20 p 58

Pressed Metal Institute:
National and District Committees Appointed, Oct 11 p 114
Reconversion Needs Heard, July 5 p 137

Pressed Steel Car Co., Inc.:
Enters Household Appliance and Equipment Field, July 12 p 91

Presses:
Bellows Die Cushion, Dayton Rogers Mfg. Co., Dec 27 p 64
Bench, Denison Engineering Co.*, Aug 2 p 71
Combination Molding, F. J. Stokes Machine Co.*, Dec 27 p 62
Die Cushions, Dayton Rogers Mfg. Co.*, Dec 27 p 64
Die Separator, Lyon-Raymond Corp., Dec 27 p 64
Extruded Magnesium for Safety Blocks*, Nov 1 p 63
Facilitate Sleeve Assembly in Blocks*, Aug 30 p 37
Giant Rail Press for Russia*, Nov 8 p 112
Huge Stamping Machine at Firestone Steel Products Co.*, Nov 15 p 114
Hydraulic, Charles E. Francis Co.*, Aug 2 p 71
Hydraulic, Colonial Broach Co.*, Aug 2 p 71; Dec 27 p 63
Hydraulic Cylinder Calculator, Hanna Engineering Works, Dec 27 p 63
Hydraulic, Mech-Art Products Corp.*, Dec 27 p 62
Hydraulic, Munton Mfg. Co.*, Dec 27 p 63
Hydraulic, With Heat Resistant Rubber Forming Pad*, July 12 p 98
Plastic Molding Press, French Oil Mill Machinery Co.*, Aug 2 p 72
Plastic Transfer Molding Press, Defiance Machine Works, Inc.*, Aug 2 p 72
Plate Duplicator, Thomas Machine Mfg. Co.*, Dec 27 p 63
Punch, Walsh Press & Die Div.*, Dec 27 p 64
Toggle Drawing Press, E. W. Bliss Co.*, Aug 2 p 72

Preventing Surface Decarburization in Large Shaved Transmission Gears, by E. G. de Coriolis*, Nov 29 p 56

Prices:
Administration Beset With Wage and Price Problem, Oct 18 p 80
Alloy Steel Controls to Be Off Soon, Sept 27 p 95
Aluminum and Magnesium Ceilings Lifted; Steel Not Affected, Aug 30 p 90
Appliance Ceiling Raised, Oct 11 p 103
Auto Ceilings Seen Influencing a Steel Price Advance, Nov 22 p 86
Auto Price Increases Explained in Britain, Nov 1 p 99
Automotive Parts Prices Freed as Outline of Detroit Prices Is Shown, Aug 30 p 86
Bowles and Sen. Taft Debate Price Control Continuation Need, Dec 20 p 143
Brass Mill Products Raise Stymied, Dec 13 p 124
Brookings Sees Economic Structure Endangered by Wage Increases, Sept 27 p 78
Building Materials Controls Charged to OPA, Oct 4 p 152
Cast Iron Soil Pipe Ceiling Boosted, Sept 6 p 131
Ceiling Set on "Short Orders" of High Alloy Castings, Sept 6 p 131
Cement Institute Basing Point Setup Under Attack by Government, July 5 p 101
Changes Limited for Machinery Makers, Aug 9 p 102
Clayton Formula Extended for Tools, Nov 15 p 124
Construction Machinery Ceiling Raised, Oct 11 p 110
Controls on Major Items Will Not Be Lifted Yet, Aug 9 p 102
Controls Relaxed on Many Industry Items, Sept 6 p 134
Copper and Brass Castings Ceiling Increased, Sept 27 p 136
European Steel Marts Still Reflect Supply and Price Dislocation, Sept 6 p 124
Gray Iron Castings Upped 10 Pct, Oct 4 p 142
Hardware Upped, Nov 22 p 159
House Report Criticizes OPA Policies; Recommends Changes, Nov 1 p 105
"In Line" Prices to Be Used on Machines, Parts, Equipment, Aug 30 p 88
Installation Charges Billed With Machinery, Aug 30 p 91
Iron Freight Car Wheels Ceilings Increased, Oct 18 p 176B
Murray Outlines Operation of Premium Price Quota Committee in Report, July 26 p 109
OPA Alleges Illegal Price on Washing Machines, Sept 6 p 164
OPA Announces New Postwar Policy for Machinery, Dec 6 p 111
OPA Boosts Stampings, Screw Machines, and Forgings, Oct 4 p 150
OPA Exempts Price Control for Dismantling War Plants, Oct 11 p 97
OPA Meets With Auto Parts Group in Move to Fix Car Prices, July 5 p 82
OPA Plagued by All Factors in Auto Pricing, Nov 15 p 82
OPA Program Approved for Industry, Aug 30 p 84
OPA Sets Automobile Price Ceilings Amid Unfairness Charges, Nov 22 p 110
OPA Suspends Controls on Some Metal Supplies, Nov 22 p 90
OPA's Reconversion Price Program*, Aug 30 p 89
Oil Country Tubular Goods Ceilings in California Raised, Oct 18 p 86
Pig Iron Increased 75¢ Per Ton, Oct 25 p 104
Procedure for Adjustment on Bolts, Nuts, etc., Outlined, Nov 22 p 111
Procedure to Determine Machinery Reconversion Ceilings, Oct 11 p 100
Profit Factors on Eight New Groups Announced by OPA, Aug 30 p 88
Reconversion Price Program Rounded Out With New Orders, July 26 p 106
Regional OPA Offices to Handle Refractories Construction Materials, Nov 8 p 117
Regulation MPR 594 Governing New Passenger Cars, Sept 13 p 80
Relaying Rail Prices Clarified, Aug 30 p 91
Soil Pipe and Fittings Ceiling Raised, July 5 p 118
Special Pricing for Some Firms Described, Aug 30 p 64
Special Pricing of Wartime Products Out, Nov 8 p 113
Stainless Steel Control Suspended by OPA, Oct 18 p 100
Suspension of Control on Automotive Parts, Sept 6 p 128
Taft Proposal Calls for OPA Price Rises to Offset Rising Costs, Dec 6 p 156
Warehouse Return on Galvanized Sheets Raised, Dec 6 p 123
(See also Steel Industry, Prices)

Priorities:
Cast Iron Bathtubs Released From Control, July 12 p 102
CPA Outlines How to Get Priorities After Year Ending, Dec 20 p 136
Construction Speeded by Order Amendment, Aug 16 p 105
Cutback Priorities Clarified in Direction 9-PR-1, July 26 p 110
Direction 11 to Pr 1 Promulgated by WPB, Oct 4 p 140

Ease Brake Shoe Sequence, Aug 9 p 105
L and M Orders to Be Revoked, Aug 16 p 105
Limited Control System Replaces CMP Sept 30, Aug 30 p 80
Material Holders Now Free in Disposal Plan, Dec 27 p 134
Materials Stockpiling Exception Clarified by Interpretation, July 19 p 100
Metal Furniture Controls Partially Relaxed, Aug 16 p 110
Military Producers Aided, Aug 9 p 103
Preference Ratings Halted, Sept 20 p 94
Preference Ratings to End on Sept 30, Sept 6 p 104
Pressure Brought to Bear for Sub-military, Aug 9 p 106
Restrictions on Metals, Bearings, Electronic Equipment Lifted, Aug 16 p 144
Revision of Regulation to Help Small Manufacturers, Aug 9 p 151
Special Sales Now Generally Unrestricted, Oct 4 p 100
Spot Authorization Order Amended by WPB to Speed Civilian Production, July 12 p 106
"Spot" Plan Ended, Aug 30 p 90
Surplus Inventories Freed for Production, Aug 30 p 91
Ten Day Delay Granted to Contractors in Canceling Ratings, July 19 p 105
Three Ratings System, Sept 13 p 82
WPB Policy for Use in Granting Civilian Priorities, July 12 p 94
WPB Revises Rating System Covering AA, Sept 27 p 106

Production Work on Jig Borers, by Carl Himmelright*, Aug 23 p 72

Progressive Welder Co.:
Duplex Seam Welder*, Oct 11 p 73
60 Cycle Induction Heater for Shrink Fits*, Dec 6 p 76
Spot Welder, Oct 11 p 73

Pullman Standard Car Mfg. Co.:
Builds Car Body Shop, Sept 20 p 154
Sets Wage Rates for Pullman Employees, Dec 6 p 158

Pumps:
Gearless, Eco Engineering Co.*, Nov 8 p 84
Hecker Co. to Produce Aircraft and Automotive Pumps, Oct 18 p 103
High Pressure, Martin Wells*, Dec 6 p 84
Hydraulic, Pesco Products Co.*, Oct 18 p 74
Pesco Fuel Booster Raises Aircraft Engine Power, Aug 16 p 149
Screw Pumps, Quimby Pump Co.*, Dec 6 p 84
(See also Plant Equipment)

Putchinski, John:
Graphite Molds for Short-Run Castings*, Sept 6 p 83

Q

Quality Control of High-Tensile Steel Castings, by W. West, C. C. Hodgson and H. O. Waring*, Nov 29 p 52

Quimby Pump Co.:
Screw Pump*, Dec 6 p 84

R

R-B-M Mfg. Co.:
Heavy-Duty Voltage Regulators*, Nov 22 p 79
Magnetic Relays*, Oct 18 p 74

Radar:
M.I.T. Research Leads to Extensive Engineering Series, Dec 13 p 164

Radio Receptor Co., Inc.:
Selenium Rectifiers*, Oct 18 p 74

Radiography:
X Ray Standards for Purchasing Castings*, Nov 22 p 62
(See also Testing and Inspection)

Railroads:
All-Aluminum Cars, July 19 p 95
Awards for 1946 Building Program, Oct 18 p 95
Axle Ceilings Upped; Wage Increases Studied, Dec 27 p 72
Baldwin Locomotive Orders 2000 Hp Diesels, Oct 25 p 96
Baldwin Locomotive Plans Large Volume of Export Business, Sept 20 p 116
Baldwin Receives Locomotive Order from N.J. Central, Nov 8 p 117
Brazil Buys Passenger Cars, Sept 6 p 180
Canadian National Orders New Equipment, Dec 27 p 137
Canadian Railways to Expend $138 Million, Nov 1 p 99
Carnegie Exhibits "Cor-ten" Freight Cars, Nov 1 p 128
Cars, Locomotives and Other Equipment Ordered, Sept 20 p 116
C&E Trains to Be Built by Budd Co., Aug 2 p 126
Domestic Freight Car Inquiries Total 22,500, July 19 p 142
Export Premiums Approved, Aug 16 p 110
First New Standard Steel Boxcar*, Dec 13 p 110
Foreign Rolling Stock Disposal Not Promising, Nov 1 p 98
Freight Car Orders, Oct 25 p 93
Freight Rate Petition Denied, Nov 15 p 105
Freight Rates for Armor Plate Modified, Nov 29 p 93
Freight Rates for Armor Plates and Shapes Reduced, Sept 20 p 161
French Freight Car Inquiries Up Again, Nov 8 p 112
Great Britain Turns to Wood in Face of Steel Shortage*, Dec 27 p 91
Installed 21,948 Freight Cars in First Six Months, July 26 p 111
ICC Rules Railroads Hold Freight Rates Over Water Traffic, Dec 27 p 76
Iron Freight Car Wheel Prices Up, Oct 18 p 176B
Lose Freight Rate Battle, Dec 6 p 109
New York Central Buys 18-8 Double Bedroom Cars From E. G. Budd Co., Dec 27 p 96
No Prior Clearances for Orders, July 19 p 101
Panama to Buy Equipment Here, Dec 27 p 80
Rail Replacement Limited by Shift in Mill Tonnage Away From Rails, Dec 6 p 112
Relaying Rail Prices Clarified by Bowles, Aug 30 p 91
Reynolds Directs Newly Designed Aluminum Freight and Passenger Car Equipment*, Nov 22 p 114
Rocky Mountain Freight Rates, Oct 25 p 82
Santos-Arica to Solve Economic Problems in South America, July 26 p 116
600 Hp Locomotive, General Electric Co., Aug 16 p 76
Standardization for Passenger Cars, Dec 6 p 118
Study Predicts Disruptive Trends in ICC Rate Case, Aug 2 p 95
1200 Passenger Cars on Order for 1946 Delivery, Oct 4 p 116
World's Most Powerful Locomotive Delivered, Dec 13 p 142
Youngstown Coal Rate Reductions Branded "Utterly Inadequate", Oct 25 p 95

Railton, C. L., and Hipperson, A. J.:
Electrical Characteristics of Spot Welding Machines*, Oct 25 p 59

Rambush, N. E., and Taylor, G. B.:
Behavior of Charge Material in the Cupola, Nov 15 p 65

Rapid Spot Test for Nickel in Steel, by E. R. Vance and H. S. Gonser, Sept 13 p 540

Raskin, Mitchell:
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67

Rasmussen, R. T. C., and Sillers, F., Jr.:
Electrolytic Manganese vs. Ferromanganese Addition Agents, Dec 6 p 80

Reconstruction:
Industrial Rehabilitation Well Along in Postwar Russia*, Dec 20 p 111
Ruhr Bomb Damage Will Delay European Restoration by Months*, July 5 p 110B

Reconstruction Finance Corp.:
Acts in Surplus Machine Tool Sales, Dec 6 p 124
Army Surpluses Offered, Dec 27 p 97
Boston Agency Sells 76 Tools, Oct 25 p 108
Cancels All Alcoa Smelting Plant Leases, Sept 13 p 106
Cancels Lease on Andrews Steel Co., Sept 20 p 113
Copperweld Steel Asks for Leasing of Scrambled Plant Facilities on a Rental Basis, Nov 15 p 115
Five Subsidiaries Have Been Merged to Simplify Operation, July 19 p 120
Industrial Plants and Sites Declared Available for Sale, July 19 p 100; Sept 13 p 106; Dec 6 p 152
Inventories of Government-Owned Machine Tools and Production Equipment Compiled, Aug 9 p 110
Kelsey Hayes Plant for Sale, Aug 2 p 130
McKee Co. Analyzes Geneva Steel Markets*, Nov 15 p 112
Micromatic Hone Buys Surplus Plant, Aug 30 p 60
Negotiating Sale of Aircraft Plants, Sept 27 p 124
Operating Nationwide Disposal Agencies to Handle Surpluses, July 19 p 124
Plant Disposal Report Shows Bethlehem Buys at 20 Million, Sept 27 p 98
Sale of Surplus Property Reached $133,462,000, Aug 2 p 120
Surplus Data Itemized, Aug 9 pp 86, 114
Surplus Property Declarations, September, Nov 15 p 105
Surplus Property Office Transferred, Nov 1 p 105
Surplus Sales Realize 50 Pct, Sept 6 p 134
Surplus Warehouse Being Established at East Chicago, Aug 2 p 130
Undertakes Sales, Aug 23 p 116
Urges Junking Small Lots of Surpluses, Aug 9 p 102
War Plant Leased to Budd Co., July 12 p 104

Reconversion:
British Issue Report, Dec 27 p 78
British Program, Sept 6 p 106
Canada's Being Pushed but Temporary Unemployment Continues, Sept 6 p 133
Chemical Industry Plans $200 Million Expansion Program, Dec 27 p 94
CPA Estimates 1/3 of Warplants May Be Used for Civilian Production, Dec 20 p 110
Cleveland Industry Getting Under Way Quickly, Sept 6 p 128
Cleveland Work Week Shortened, Aug 2 p 122
CED Survey Indicates Orderly Reconversion for Detroit, Aug 9 p 124
Cracking the War Agency Front May Require Major Invasion, Aug 23 p 90
December Production to Hit 112 Pct According to WPB Report, Sept 6 p 123
Extent of Military Cutbacks One of Prime Requisites for Success, July 5 p 84
German Steel Industry Urged to Be Used for Reconversion, Dec 13 p 108
Government-Industry-Labor Face Mutual Responsibilities, Sept 13 p 107
Grants by WPB Total 1120, July 12 p 130
Industry Wide Problems Begin, Aug 23 p 110
Krug Lifting All Unnecessary Controls, Aug 23 p 90
Low Tool Priority Seen as Delaying Item in Job, Aug 16 p 137
Mead Report Warns Job Not Being Done by Mobilizer Vinson, Aug 2 p 96
Milwaukee Firms Report, Sept 13 p 132
National Scientific Roster Organizes for Needs, Dec 20 p 138
Needs Heard by Pressed Metal Institute, July 5 p 137
New York City Assn. Finds Pertinent Data on Needs, Sept 20 p 134
Plant Survey Encouraging, Sept 20 p 115
Plants Producing Regular Line During War Reconverting Rapidly, Aug 30 p 79
Points in the Steel Construction Industry, Aug 2 p 125
President Issues Order, Aug 23 p 88
Price Program Rounded Out With New Orders, July 26 p 106
Profit Factors Issued for Reconversion of More Industry Groups, Aug 2 p 104
Release of Enemy Data to Aid U.S. Reconversion Requested, Nov 15 p 166
Sheet Committee Asks for Freedom From CMP to Speed Production, Aug 9 p 132
Small Business Committee Recommends Use of War Plants to Help Steel Situation, Aug 9 p 128
Snyder Report Admits Changes to Result in Temporary Unemployment, Aug 23 p 107
Theoretical Picture of Size of Reconversion and Progress by WPB, Aug 2 p 106
War Agencies Only Partly Prepared for Sudden Advent of Victory, Aug 16 p 104
WPB Approves 948 New Requests, July 5 p 109
WPB Will Set Up Units to Further Aid Industrial Research, July 12 p 95
Western Governors Exerting Pressure for Resident OWMR Director, Sept 6 p 110

Redmer Air Devices Corp.:
Collet Chuck, Aug 30 p 55
Foot Control*, Nov 8 p 83

Reduction Sales Co.:
Transformer Welder, Oct 11 p 72

Reed-Prentice Corp.:
Vertical Milling Machine*, Aug 9 p 78

Rees, W. J.:
Non-Siliceous Molding Paints and Powders*, Oct 18 p 53

Reeve, L.:
Hydrogen and Oxygen Contents of Welds, Dec 20 p 59

Refractories:
Permeable Refractories in Furnace Construction*, Aug 23 p 70
Regional OPA Offices to Handle Price Adjustments, Nov 8 p 117
Sillimanite and Magnesite Sleeves and Nozzles, Dec 13 p 75
Stabilizers Prevent Disintegration, Sept 13 p 59

Rehabilitation, Veterans:
ASM Bulletin to Cover Re-employment, Oct 11 p 133
British Veteran Skids Back to Bottom Rung*, Dec 6 p 159
Carboloy Seeks to Establish Seniority Procedure, Nov 1 p 96
Carnegie-Illinois Survey Shows Servicemen Have New Skills, Aug 16 p 113
National Radiator Establishes Veterans' Employment Program, Aug 16 p 104
Navy Air Technical Training Fills Vocational Education Vacuum*, Sept 27 p 104

Procedure for Release From Armed Services Outlined in Bulletin, Oct 18 p 156
Re-employment of Vets Reaching 13,000 Total at U.S. Steel Plants, Nov 1 p 130
Superseniority Provided for All Wartime Replacement Veterans, Sept 27 p 105
Superseniority Ruling Sought by Union and Western Cartridge Co., Dec 20 p 106
Tool and Die Makers Training Veterans, July 26 p 144
Westinghouse Says Veterans Eager to Work, Dec 27 p 90

Reliance Electric & Engineering Co.:
Pressure Cast Rotors*, Nov 22 p 119

Remp Co.:
Tank Preheater, Nov 8 p 84

Renegotiation:
Extension of Renegotiation Act Confronts Industry With Readjustment Problem, July 12 p 70
Plants to Extend Time for Payment of Claims, Dec 6 p 115
(See also Contract Termination)

Repair of Defective Gray-Iron Castings, by S. H. Brams, Aug 9 p 74

Reparations:
CPA to Handle Selling of German Equipment, Dec 6 p 170
Meeting Under Way in Paris, Nov 22 p 98

Republic Steel Corp.:
Earnings, Second Quarter, July 26 p 107; Third Quarter, Nov 1 p 100
Expansion Program Will Increase Flat Rolled Output, Aug 2 p 97
NLRB Turns Down Request to Dismiss Strike Vote Petition, Nov 15 p 86
Purchases Stevens Metal Barrel Plant, Oct 4 p 114
Strikers Return to Chicago Plants, Aug 2 p 103

Resins:
(See Plastics)

Revere Copper & Brass, Inc.:
Free Cutting Copper Rod Machines Easily*, July 26 p 60
Switch Copper, July 12 p 64D

Reynolds, David P.:
Reynolds Charts Postwar Aluminum Developments, Sept 13 p 102

Reynolds Metals Co.:
Aluminum Truck and Trailer Body*, Nov 15 p 121
Directs Newly Designed Freight and Passenger Car Equipment, Nov 22 p 114
Financial and Official Setup of Mexican Plant, Sept 20 p 112
Leases Alumina Plant From RFC, Dec 20 p 112
Less-Than-Carload Aluminum Container*, Nov 8 p 117
Postwar Aluminum Developments, Sept 13 p 102

Rheem Mfg. Co.:
Centers on Birmingham Plant, July 12 p 108
Earnings Increase, Nov 15 p 123
To Operate at Least 12 Plants, Aug 30 p 68

Rheem Research Products, Inc.:
Iridite Protective Finish, Sept 20 p 85

Riveting:
Dimpling Difficulties of 75S Alclad*, Dec 13 p 61
Rivet Sorting Machine, Glenn L. Martin Co.*, Sept 6 p 93
Rivnut, Threaded Tubular Rivet, B. F. Goodrich Co.*, Oct 25 p 71
Skin Heating*, Sept 6 p 86

Robbins & Meyers, Inc.:
Small Diameter Stator*, July 12 p 64D

Rockwell Mfg. Co.:
Formerly Pittsburgh Equitable Meter Co.*, Dec 20 p 134

Rockwell, W. S., Co.:
Batch Furnaces*, Nov 15 p 79

Rogers Machine Works, Inc.:
Vertical Turret Mill*, Sept 27 p 69

Rolling Mills:
Twin-Motor Drives in Hot Reducing Mills*, Oct 11 p 58

Rosenthal, H., Lipson, S., and Markus, H.:
Precision-Cast, Copper-Base Alloys*, (2 Parts) Nov 1 p 46; Nov 8 p 64

Rosenthal, Richard L.:
Management Aid for Prosperous Growth of Smaller Business Urged, Oct 25 p 149

Rubber:
Aging Bath, Precision Scientific Co.*, Nov 1 p 70
More in Belting, Dec 13 p 121

Rufford Machine Works, Inc.:
Hydraulic Stretch-Leveling Table*, Aug 2 p 72

Russell, Burdsall & Ward Bolt & Nut Co.:
Marks 100th Anniversary*, Nov 1 p 103

Russia:
Canada Gets Electrical Equipment Order, Dec 6 p 109
Coal Production Plants, Dec 20 p 97
How to Conduct All Trade With Russia, July 26 p 144
Industrial Rehabilitation Well Along*, Dec 20 p 111
Kuznetsk Pig Iron and Steel Wartime Production Increase Reported, Dec 20 p 100
Orders 24 Compressors for 500 Mile Pipeline, Sept 13 p 100
Rebuilding to See Modernized Production Units, Oct 4 p 144
Scientific Research Seen Making Great Strides, Aug 2 p 84
Soviet Steel Industry Shifted Eastward During the War, Nov 29 p 107
Steel Production Methods at Magnitogorsk Works Cited, Dec 13 p 171
Steel Works in Ukrainian S.S.R. Rehabilitated, Nov 1 p 122
Timken to Help Build Bearings Plant, Aug 9 p 99

Rust Furnace Co.:
Large Furnace Contract Taken, Dec 13 p 170
New Furnaces for Tie Plates, Splice Bars, Aug 16 p 103

Rustless Iron & Steel Corp.:
Electropolishing of Stainless Steels*, July 12 p 64
Expansion to Include Five Projects, Sept 6 p 136
Gas Cutting of Stainless Aided by Fluxing System*, Aug 9 p 61
Merger With Armco Announced, Sept 27 p 95
Sodium Hydride Process for Descaling Steel*, Nov 8 p 58

Ruthman Machinery Co.:
Circulator*, Aug 23 p 82

S

Safety Equipment:
(See Plant Equipment)

Salvage:
Aluminum Recovery by Caustic Soda Reduction, Oct 11 p 101
Repair of Defective Gray-Iron Castings, Aug 9 p 74
Six Million Gross Tons of Scrap Uncovered Yearly by Salvage Div., Oct 11 p 105
Steel Drum Reclamation, Sept 13 p 97
Tin Can Recovery Urged, Nov 22 p 126
Tin, 16,000 Tons by June, Sept 27 p 136
Users of Canned Products Must Adopt Tin Can Salvage, July 12 p 95
Welding Job Prevents Steel Mill Shutdown, Aug 23 p 69
(See also Scrap)

Sanderson, F.:
Canada Seen Close to Self Sufficiency in Steel, Oct 11 p 97

Saylor, F. D., & Son:
Lock Nut, Aug 30 p 55

Scarbrough, H. E., and Bornholdt, W. J.:
Conveyorized Non-Decarburizing Heat Treatment of Gears*, Oct 18 p 54

Scharf, P. B.:
Flash Welding Alloy-Steel Rings*, Aug 16 p 50

Schmidt, A. O.:
Cutter Design Evaluated by Production Runs*, Nov 22 p 54

Schrillo Aero Tool Engineering Co.:
Cylindrical Plug Gage*, Oct 25 p 70

Scrap:
Allocation Stopped Oct. 1, Oct 4 p 117
Aluminum Floor Prices Set Up by SPA, Oct 11 p 136
Aluminum Market Demoralized Since VJ-Day, Aug 23 p 146
Aluminum War Scrap Estimated at 3 Billion Lb, Nov 1 p 108
Bayer Aluminum Recovery Depends on Cost and Freight Factors, Oct 11 p 101
Blast Furnace Grades Stronger, July 12 p 138
Borings Sintered by Greenawalt Machine, Dec 20 p 50
British Imports of Iron and Steel, 1939-44, Nov 22 p 116
British War Surplus Sales, Dec 13 p 124
California Metals Expands, Dec 20 p 108
Committee Formed, Sept 6 p 140
Construction Limit Set in Dealers' Plant, July 12 p 138
Copper Prices Decline 2c Per Lb, Aug 23 p 146
Copper Prices Drop in a Firm Market, Oct 4 p 164
Copper Reports No Longer Required, Nov 15 p 121
Demand Weak, Sept 13 p 152
Docking and Trucking Charges Authorized by OPA, Oct 11 p 107
Freight Reduction to Up Coast Scrap Price, Dec 13 p 115
Germany Self-Sufficient, Dec 20 p 56
Inventory Control for Tin and Lead, Nov 1 p 78
Iron and Steel Stocks, June 1945, Sept 27 p 93; July, Nov 15 p 105
Land Aims to Avoid Flooding Markets With War-Damaged Vessels, Aug 9 p 138
Lead Scrap Consumption Up, Aug 2 p 134
Lewis Foundry Develops Shears, Nov 8 p 121
Mission Is Bound for Europe, Aug 30 p 84
Navy Disposal of Aircraft Aluminum Scrap to Produce 15 Million Lb of Secondary Metal*, Dec 20 p 104
Nickel Drops; Aluminum Price Firm, Nov 29 p 110
No Overseas Except Army Stores, Nov 15 p 88
OPA Acts to Check Ceiling Violations, Dec 27 p 104
Ole Man Winter Stymies Output, Dec 20 p 118
Pig Iron and Foundry Scrap Tighter Even Than During the War, Nov 15 p 110
Premium Authorized on Copper Alloy, Aug 9 p 82
Prices May Delay Postwar Developments in Open-hearth Practice, Aug 16 p 108
Rapid Spot Test for Nickel in Steel, Sept 13 p 54 O
RFC Delays Termination Scrap, Oct 11 p 107
Six Million Gross Tons Uncovered Yearly, Oct 11 p 105
Southern California Demand Might Firm Market to Increase Postwar Pacific Coast Steel Costs, July 5 p 88
Special Committee Formed, Aug 23 p 109
Specially Designed Equipment May Be Disposed of as Scrap, Aug 30 p 90
Stockpiling Begun at Ravenna Ordnance, Sept 20 p 168
Supplies, April, July 5 p 99
Trade Eyes Freight Rate Drop, Dec 13 p 126
WPB Relaxes Import Control, Sept 13 p 106

Screw Machines:
Die Head, Landis Machine Co., Dec 20 p 71
NSMPA Members Unable to Buy Surplus in Quantity, Oct 11 p 106
Output of Rated Business Bars Civilian Items, July 12 p 68
Rotary Stock Stop, Barnaby Mfg. & Tool Co.*, Dec 20 p 68
Setup Charts*, (Part 4) July 5 p 63
Tools, Boyar-Schultz Corp.*, Sept 6 p 98

Second War Powers Act:
Measure Extending Early Passage Expected, Dec 6 p 90
Passed and Sent to Truman, Dec 27 p 68

Seelig, Richard P., and Hradecky, R.:
Powder Metallurgy Precision Parts*, Sept 27 p 50

Selecting the Proper Heat-Resistant Steel, by R. A. Lincoln, Nov 8 p 74

Selection of Die Steels for Cold Work, by W. H. Wills*, Nov 22 p 58

Senate Military Affairs Committee:
Bills Governing Stockpiling of War Materials Up for Consideration, Nov 8 p 90
Differing Views Enliven Geneva Steel Disposal Hearing, Nov 15 p 116
Stockpiling Bill Reported On, Dec 13 p 86
Symington Tells Committee U.S. Steel Logical Operator for Geneva Plant, Nov 8 p 109

Senate Small Business Committee:
Recommends Use of War Plants to Help Steel Situation, Aug 9 p 128

Setup Charts for Automatic Screw Machines, by J. J. Meadows*, (Part 4) July 5 p 63

Setup Charts for Bullard Mult-Au-Matics, by J. J. Meadows*, Dec 13 p 54

Shackles:
(See Fasteners)

Sharon Steel Corp.:
Purchases Carnegie's Farrell Works; Takes Over on Dec. 15, Nov 15 p 108

Shaving:
Automatic Roto Shaving for Fine Surfaces*, Dec 27 p 56
Finishing Spur Gears for Aircraft Engines*, Dec 27 p 46
(See also Gear Manufacture)

Sheet Metal Specialty Co.:
Plant Additions Under Way, Aug 16 p 146

Sheffield Corp.:
Automatic Diamond Dresser*, Dec 20 p 69
Crush Dressing Device, Sept 27 p 69
Measuring Instrument*, Dec 20 p 72
Presents Early Model Instruments to Smithsonian Institute*, Aug 2 pp 106, 128

Shell Oil Co.:
Bearing Oil Spray Reduces Jet Heat, Aug 23 p 140

Shipbuilding:
Bethlehem to Build Nine Refrigerated Vessels, Oct 4 p 111
British Get French Contracts, Nov 1 p 99
Canada Will Continue After War, Sept 20 p 114
Canadian Operations Halted, Sept 13 p 110
Edge Preparation of Ship Plate*, Sept 13 p 60
France Ordering Ships at High Level in Foreign Markets, Dec 6 p 98
Ingalls Will Build 14 Cargo Ships, Aug 16 p 130
Navy Outranked as Steel User by U.S. Maritime Building, Sept 6 p 160
No Utopia, Sept 27 p 90; Nov 15 p 102
Northwest in Active Production, July 19 p 86
Standardization of Shackles*, July 12 p 50
United Shipyards of Canada to Be Sold, Nov 1 p 130
War Assets Corp. Sells Surplus Ships, Nov 8 p 113
Welded Ship Failures Traced*, Nov 29 p 49
Westinghouse Ship Propulsion Contracts Slashed $12 Million, Sept 13 p 88

Siefen, J. J., Co.:
Spray Setup of Polishing Wheels and Buffs*, July 12 p 55

Sillers, F., Jr., and Rasmussen, R. T. C.:
Electrolytic Manganese vs. Ferromanganese Addition Agents, Dec 6 p 80

Silver:
Dealers Expect OPA Release of Foreign Silver, Sept 6 p 178
Green Act Extension, Dec 27 p 80
Open Market Silver Nears Ceiling, Sept 27 p 136
Speculative Buying, Oct 25 p 110
Users' Cost Up, Nov 8 p 124

Simpson, N. H., and Dorcas, K. E.:
Tests on Iridite Finish for Cadmium and Zinc Plated Steel, July 26 p 61

Sintered Beryllium for X Ray Tube Windows, by F. C. Kelley*, July 26 p 68

Sintering:
Borings Sintered by Greenawalt Machine, Dec 20 p 50
Mesabi Taconite Sinter Costs Set at $6, Dec 13 p 174
Sinters Economize Blast Furnace Operation*, Nov 29 p 62

Sjostrom Machine Co.:
Magnetic Floor Sweeper*, Nov 8 p 82

SKF Industries, Inc.:
Assembly of Bearings by Sampling Principle*, Oct 11 p 53

Sloss-Sheffield Steel & Iron Co.:
Earnings, Third Quarter 1945, Nov 1 p 101

Smaller War Plants Corp.:
Continues to Make Loans, Aug 30 p 90
Surveying Needs of Machine Tool Users, Sept 13 p 148
250 Firms Own 60 Pct of Productive Assets, July 26 p 111

Smith, A. O., Corp.:
Annual Report, Dec 13 p 148
Glass Lined Steel Silo Developed; Engine Driven*, Oct 25 p 146

Smith, Lt. Templeton:
Versatile Stowage With Eight-way Pallets*, Aug 30 p 34

Snyder, John W.:
Report Admits Changes to Result in Temporary Unemployment, Aug 23 p 107

Snyder Tool & Engineering Co.:
Automatic Cycle Machine*, Aug 9 p 77
Center Driven Lathes*, Nov 29 p 68
Hollow Milling Machine*, Sept 27 p 72

Society of Automotive Engineers:
How Military Vehicles Perform Described by Ordnance Officers, July 5 p 121
Moves to Add Some NE Steels to Standard Listings, Nov 15 p 119
New Board Will Supervise Technical Committee Activities*, Sept 27 p 116
Shot and Grit Standards, Sept 13 p 54P

Sodium Hydride Process for Descaling Steel, by J. Albin*, Nov 8 p 58

Soft-Grit Blasting of Cylinders, by J. Albin*, Nov 22 p 65

Soldering:
Induction Brazing and Soldering*, Aug 9 p 56
Overseas Repair Shop Develops New Type of Iron, July 26 p 122
Stand, Ess Specialty Corp.*, Oct 11 p 72

Somervell, Gen. Brehon:
Miracles of War Production and Management Revealed in 1945 Report, Nov 1 p 76

South America:
Colombia Buys Tinplate, Nov 22 p 121
Dravo Corp. Builds Spillway Gates for Project in Uruguay, Nov 22 p 122
Peru Plans $10 Million Expenditure for U.S. Highway Machinery, Dec 27 p 102
Railroad to Solve Economic Problems, July 26 p 116

South Bend Lathe Works:
V-Belt Drive Lathe, Sept 27 p 70

Southern Assn. of Science and Industry:
Incorporates, Sept 27 p 126

Spain:
Iron and Steel Output, 1944, Sept 13 p 109
Telephone Facilities Purchase Slows Steel Imports, Nov 8 p 118
Wire Products and Template Prices Drop, Sept 20 p 115

Speare's, Alden, Sons Co.:
Suction Pump, Aug 23 p 82

Spectrograph:
(See Testing and Inspection)

Spheroidizing:
Metallurgy of SAE 52100 Ball Bearing Steel*, July 5 p 54

Spinning:
Copper-Base Alloys*, Aug 30 p 42

Spinning of Copper-Base Alloys, by W. P. Gobeille and W. J. Jufschmidt*, Aug 30 p 42

Sponge Iron:
Bureau of Mines Announces Production of High-Grade Iron in Brick Plants, Nov 15 p 110
(See also Powdered Metals)

Spraying:
(See Cleaning and Finishing)

Square D Co.:
Circuit Breaker*, Nov 22 p 80
Convertible Contactors*, Oct 18 p 73
Oil-Tight Pushbuttons*, July 12 p 64D

Stacey Bros.:
Boosting Capacity of Storage Tanks*, July 26 p 73

Stainless Steel:
Base Price Move Boon to Consumers, Sept 13 p 99
Budd Output Will Take 18,000 Tons a Year, Oct 25 p 97
Electropolishing*, July 12 p 64
Gas Cutting Aided by Fluxing System*, Aug 9 p 61
German Lower Alloying Content, Dec 20 p 60
McLouth Begins Production, Sept 20 p 112
Nickel Less Critical Stainless Mills Told, July 12 p 134
Now on Open-ended List, July 26 p 90
Open Ended; Permit Nickel Plating, July 19 p 101
Price Control Suspended, Oct 18 p 100
Production Technique at C-I Dusquesne Plant, Dec 13 p 76
Release Boon to Industry, July 26 p 90
Selecting the Proper Heat Resistant Steel, Nov 8 p 74
Sodium Hydride Process for Descaling*, Nov 8 p 58
Substitution for Ferromanganese in Stainless Heats, Nov 29 p 101
Used as Basic Material in Service Station Design*, Nov 1 p 74
Weldability Factors for 18-8 Stainless, Dec 27 p 58

Standard Gage Co., Inc.:
Improved Plug Gage Offers Many Advantages*, Sept 13 p 54

Standard Machinery Co.:
Welding Positioner, July 19 p 74

Standard Pressed Steel Co.:
Multi-purpose Screwdriver*, Aug 16 p 78

Standard Safety Equipment Co.:
Safety Apron, Aug 23 p 84

Standard Scientific Supply Corp.:
Detergent Wetting Agent, Sept 20 p 86

Standards:
Aluminum Utensil Standard Proposed, Nov 8 p 124
ASTM Copper and Alloy Standards, Nov 8 p 124
Electrical Standards for Machine Tools Set, Dec 6 p 123
Forging Tolerances, Dec 6 p 126
New Electric Arc-Welding Standards, Dec 20 p 76
Policy Committee Recommends Orderly Development, Aug 16 p 142
Rivet Standards Proposed, Dec 13 p 120
Shot and Grit for Peening and Cleaning, Sept 13 p 54P
Simplified Bar and Shape Standard Proposed, Dec 6 p 92
Simplified Practice for Certain Steel Shapes Now Ready, Sept 13 p 146
Simplified Practice Recommendations May Be Retained by Firms, Aug 30 p 94

Stanley, George J.:
Postwar Aluminum Marketing Revolves Around Cost and Volume, Sept 6 p 129

Stearns Magnetic Mfg. Co.:
Magnetic Separator, Nov 29 p 67
Permanent Magnet Spout, Oct 4 p 87

Steel:
Bessemer for High Pressure Steam Piping, Dec 27 p 44
British EN Alloy Specifications, Nov 15 p 71
Carbon Steel Consumption, Second Quarter, 1945, Nov 22 p 113
Color Code for Bar Stock*, July 12 p 56
Data on Specification for Design of Light Gage Steel Discussed, Nov 1 p 136
Die Steels for Cold Work*, Nov 22 p 58
Foreign Tool Steel Comparison Chart, Aug 2 p 48
German Cutting-Tool Steel Substitutes Revealed Inferior, Nov 22 p 155
German Tool and Special Steels, Sept 13 p 54A
Low Alloy High Tensile Steel Bumpers Expected to Find Wider Use in Postwar Automobiles, July 5 p 80
New Uses for Hardsteel*, Dec 13 p 68
Stough Urges New Techniques in Output of Light Steel to Expand Use, Nov 8 p 114
Surplus on Sale, July 5 p 120
Tungsten Tool Steels Overtaking Molybdenum, Nov 29 p 110
WPB Estimates 1945 Requirements, July 19 p 78
Zimmerman Cites Growing Use of Numerous Fine Steels in Varied Industries*, Nov 22 p 142
(See also Stainless Steel)

Steel, Forming and Shaping:
Castings Made by the Thermit Process*, Aug 9 p 55
Edge Preparation of Ship Plate*, Sept 13 p 60
Flame-Cut Cinder Car Rack*, Nov 1 p 49
Welded Construction Reduces Die Cost*, Oct 4 p 83

Steel, Metallurgy:
Acid Electric Furnace Carbon Control*, Oct 18 p 69
Bessemer Steel for High Pressure Steam Piping, Dec 27 p 44
British EN Alloy Specifications, Nov 15 p 71
Characteristics of Induction-Hardened Steel, Nov 15 p 156
Creep Resistant Alloy Steels, Aug 2 p 58
Die Steels for Cold Work*, Nov 22 p 58
Effect of Lead Additions on Free-Cutting Steels, Aug 16 p 75
Effects of Boron in Steel, Oct 11 p 54
German Tool and Special Steels: Analyses, Sept 13 p 54A
Hydrogen and Oxygen Contents of Welds, Dec 20 p 59
Low-Temperature Behavior of Ferritic Steels*, Oct 4 p 69
Magnetic Method for Diamond Hardness Measurements, Nov 29 p 65
Magnetic Particle Detection of Retained Austenite and Carbide Segregation*, Oct 25 p 46
Maximum Carbon in Carburized Cases*, Oct 11 p 50
Metallic Impurities in Steel, Dec 6 p 71
Metallurgy of SAE 52100 Ball Bearing Steel*, July 5 p 54
Microscopy of Lead-Bearing Steels and Iron, July 12 p 49
Micro-Spectrographic Method for Steel Segregates, Dec 13 p 63
Occurrence of Lead in Lead-Bearing Steels, Sept 20 p 83
Preventing Surface Decarburization in Large Shaved Transmission Gears*, Nov 29 p 56
Properties of Steel for Automotive Bolts*, (2 Parts) Aug 23 p 64; Aug 30 p 47
Quality Control of High-Tensile Steel Castings*, Nov 29 p 52
Segregation in a Rimming-Steel Ingot, Nov 15 p 70
Selecting the Proper Heat-Resistant Steel, Nov 8 p 74
Spot Test for Nickel in Steel, Sept 13 p 54 O
Straining of Weld Metal During Cooling*, Dec 20 p 48
Sub-Critical Annealing*, Aug 9 p 52
Titanium in Chrome-Manganese Stainless Steel*, Aug 9 p 62
Welding Galvanized Steel*, Nov 15 p 64

Steel, Production:
Acid Openhearth Production, 1944, Dec 6 p 96
British War Production (1940-44) Suffered Lack of Rich Foreign Ores, Nov 22 p 116
By Methods in Per Cent of Capacity, 1943-45, Chart, July 26 p 108
Canada, 1923-45, Dec 13 p 114
Canadian Output, May, July 12 p 85; June, Aug 16 p 148; July, Sept 13 p 100; August, Oct 18 p 95; September, Nov 22 p 157; October, Dec 13 p 92
Chicago District Production Down, Oct 11 p 99

Coal Strike Cutting Youngstown Operating Rate; Furnaces Close, Oct 4 p 112
Coal Strikes May Threaten Steel Production, Oct 11 p 99
Coal Strikes Slow U.S. Steel Corp. Rate, Oct 11 p 98
Czechoslovakia Output Rising, Oct 4 p 115
Electric Furnace Atmospheres, Oct 25 p 69
Electrolytic Manganese vs. Ferromanganese Addition Agents, Dec 6 p 80
Finished Steel Capacity, Production and Shipments 1944 Revised, July 19 p 102; May, July 19 p 103; July, Sept 27 p 99; August, Oct 25 p 97; September, Nov 15 p 116; October, Dec 20 p 108
Fourth Quarter Loss Likely to Be Less Than Expected, Oct 11 p 80
Ingot and Steel for Castings Capacity—U.S. 1884-1944, Chart, Oct 18 p 107
Ingot Capacity by Districts, 1936, 1938, 1945, Dec 13 p 116
Ingot Production, January-June 1945, July 19 p 104; July, Aug 16 p 104H; August, Sept 20 p 112; September, Oct 18 p 99; October, Nov 15 p 117; November, Dec 13 p 111, Dec 20 p 103
Kuznetsk (Russia) Wartime Production Increase Reported, Dec 20 p 100
License Crucible Steel to Produce "Cor-ten", Aug 2 p 103
Mechanized Coating of Ingot Molds*, Oct 18 p 61
Operation of 4-ton Openhearth*, Aug 2 p 42
Operations and Metallurgical Committee Advises Controls Retained, July 5 p 105
Peacetime Rate Significant, Nov 1 p 98
Percentage Gain in Ingot Capacity Greatest in West, Dec 13 p 116
Pittsburgh Ingot Production Drops; Finishing Mills Unaffected, Aug 23 p 88
Pittsburgh Mills Double Jap Production, Aug 23 p 126
Product Summary, 1940-44, July 12 p 94
Quality Control of High-Tensile Steel Castings*, Nov 29 p 52
Scrap Prices May Delay Postwar Developments in Openhearth Practice, Aug 16 p 108
Sillimanite and Magnesite Sleeves and Nozzles, Dec 13 p 75
Slashed to New Low Level; Coal Situation Chaotic, Oct 18 p 98
Spectroscopic Control of Tropenas Converter, Nov 15 p 63
Technique for Stainless Steels at C-I Duquesne Plant, Dec 13 p 76
Top vs. Machine Charging Basic Arc Electric Furnaces, Dec 13 p 77
Twin-Motor Drives in Hot Reducing Mills*, Oct 11 p 58
Western Pennsylvania's Operations Not Yet Hamstrung by Coal Strikes, Oct 4 p 113
Youngstown Rate Down, Oct 11 p 98

Steel, Treatment:
An Appraisal of Subzero Hardening of High Speed Steel*, (2 Parts) July 26 p 54; Aug 2 p 64
Chromium, Silicon and Aluminum Impregnation*, Oct 18 p 58
Cycle Annealing of Hypo-Eutectoid Steels*, Dec 13 p 69
Effect of Heat Upon Residual Stresses*, Aug 16 p 62
Gas Carburization*, (3 Parts) Oct 18 p 50; Oct 25 p 52; Nov 1 p 60
Influence of Heat Treatment on Damping Capacity, Aug 16 p 69
Tin Undercoats for Painted Steels Improves Corrosion Resistance, Dec 6 p 64

Steel Castings Replace Forgings, by E. B. Bromhead and T. E. Piper*, Nov 1 p 50

Steel City Testing Laboratory:
Portable Hardness Testing Hammer*, Nov 1 p 68

Steel Co. of Canada, Ltd.:
In Full Production, Nov 8 p 114

Steel Industry:
Allied Bombings of Germany's Steel Plants Not Decisive, Survey Shows, Nov 21 p 148
Allocations May Be Required to Assure Product Supply, Dec 13 p 112
Allocations to Get Further WPB Paring, Aug 2 p 98
American Companies Now Contacting Old European Customers, Dec 6 p 100
Atomic Bomb Development Kept Industry Guessing for Years, Aug 9 p 101
Australian Innovations Reported at Engineers Meeting, Oct 18 p 108
Bethlehem Unconcerned Over Disposition of Western Steel Plants, Aug 2 p 100
Biddle Aims Heavy Blow at Steel Corp.'s Hopes for Geneva, July 5 p 102
Brazil's New Steel Industry About Ready for Production*, July 5 p 108
British Electric Steel Output Grows in War, Nov 22 p 116
British Five-Year Plan Being Disclosed, Dec 20 p 86
British Steel Companies Face Special War Problems, Nov 1 p 145
British Steel Costs, Oct 18 p 101
Buffalo Paralyzed Under 50 In. of Snow, Dec 20 p 102
Buying Active in Canadian Market, Nov 1 p 99
Canada Close to Self Sufficiency in Steel, Oct 11 p 97
Canada Dropping Orders, Aug 9 p 151
Canadian Imports of Steel Specialties From U.S. to Continue, Oct 25 p 98
Canadian Output Cut Due to Labor Shortages and Repairs, Sept 13 p 100
Canadian Production Value in 1943 Shows 22 Pct Rise, July 26 p 107
Canning of Ordnance Required Half Million Tons of Steel, Aluminum*, Aug 16 p 104F
Capacity—United States (Ingots and Steel for Castings) 1884-1944, Chart, Oct 18 p 107
Christiansen Buys Bates Expanded Steel Corp., Nov 22 p 121
CF&I Rushing Formal Geneva Bid*, Aug 16 p 104H
Consolidated Steel Buys Western Pipe & Steel Co., Oct 4 p 98
Construction Awards, Nov 8 p 160; Nov 15 p 178; Nov 22 p 160; Nov 29 p 124; Dec 6 p 123; Dec 13 p 135; Dec 20 p 153; Dec 27 p 97
Consumption and Inventories, First Quarter, Oct 4 p 136
Consumption by Bolt, Nut and Screw Makers 1943-44, Oct 11 p 104
CMP Components Cut Frees More Unrated Reconversion Steel, Aug 9 p 103
Copperweld Steel Asks for Leasing of Scrambled Plant Facilities on a Rental Basis, Nov 15 p 115
Cut May Be 95 Pct in Quarter, Aug 16 p 105
Differing Views Enliven Geneva Steel Disposal Hearing, Nov 15 p 116
Distribution Trends Seen Changed, Oct 25 p 98
Dunn Prewar Steel Report Justified, Nov 22 p 113
Earnings Running into the Red, AISI Says, Dec 13 p 163
Enforced Export Allocations Being Planned by CPA, Dec 13 p 107
European Steel Marts Still Reflect Supply and Price Dislocation, Sept 6 p 124
Expansion Program, 1942-45, Chart, Oct 25 p 107
Export Allocations Reduced to 850,000 Tons "at the Moment", Dec 20 p 99
Exports, Percentage, 1935-45, Dec 13 p 107
Fabricated Structural Steel Bookings and Shipments, June, Aug 2 p 93; July, Aug 30 p 77; August, Oct 11 p 95; September, Nov 1 p 91; October, Dec 6 p 123
Fabricators See Close to $3 Billion Business Next Year, Nov 8 p 116
Far West Feels Regional and "Monopoly" Antagonisms to Prejudice Cheap Steel, Aug 2 p 82
Financial Reports Show Earnings Rise for Second Quarter, Aug 9 p 109
Finished Steel Capacity, Production and Shipments, 1944 Revised, July 19 p 102; May, July 19 p 103; July, Sept 27 p 99; August, Oct 25 p 97; September, Nov 15 p 116; October, Dec 20 p 108
Finished Steel Demand Estimates for 1946, Oct 25 p 143
Finished Steel Shipments for Armament, 1941-45, Sept 6 p 160
Fontana Postwar Operation Depends on Lower Cost, Nov 29 p 102
Freight Rate Case, Sept 6 p 121
Freight Rate Petition Denied, Nov 15 p 105
French Industry Limited by Coal Problem, Dec 6 p 98
Gas and Oil Pipelines to Be Fabricated by Pressure Welding, Oct 4 p 100
Geneva Steel Plant May Close Down Soon, Disposal Plans Uncertain, Sept 20 p 110
Geneva Steel Plant Put on Block with Sealed Bids Due Mar 1, Dec 20 p 109
German*, Dec 20 p 54
German Design Improvisation Described by Timken Metallurgist, Aug 16 p 109
German Industry Urged for Reconversion Use, Dec 13 p 108
German Requisition Reduced Italy's Steel, Sept 13 p 142
Government-Owned Iron and Steel Plants Capable of Independent Operation, Oct 18 p 106
Great Britain Steel Capacity Increase Nothing Like That of U.S. During the War, Sept 6 p 106
Green Light on Anti-Trust Suits, Aug 23 p 108
Heller Urges West to Buy Geneva, July 19 p 84
Hot Strip Mill Planned for Wales, Oct 18 p 109
India's Foreign Trade Declines During Wartime Period, Dec 6 p 160
Ingot Capacity Percentage Gain Greatest in West, Dec 13 p 116
Ingot Production, January-June 1945, July 19 p 104; July, Aug 16 p 104H; August, Sept 20 p 113; September, Oct 18 p 99; October, Nov 15 p 117; November, Dec 13 p 111, Dec 20 p 103
ICC Rate Decision Affects Midwestern Rail Steel Loading, Aug 9 p 122
Kaiser Claims RFC Loan Adjustment Forces His Operation at Prewar Price Structure, Aug 30 p 66
Kaiser Proposes Syndicate to Lease Far Western Steel Plants, July 19 p 99
Kaiser Refinancing Plan for Fontana Sets Value at $58 Millions, Aug 23 p 109
Krug Urges Prompt Cancellation of Bottleneck Items, Aug 23 p 116
La Consolidada Plans Expansion in Rolling Mill and Ingot Output, Dec 27 p 80
Last Canadian Control Revoked, Dec 6 p 115
Lone Star Steel Possibilities Studied, Sept 27 p 99
Manpower Shortage Aggravating Tight Sheet Steel Situation, July 26 p 88
McKee Co. Analyzes Geneva Steel Markets for RFC*, Nov 15 p 112
McKee Fontana Report Emphasizes High Cost and Narrow Markets, Nov 22 p 94
Mill Repair Parts Are Assured, Sept 27 p 101
Mill Supplies Receiving Foreign Replacement Orders, Oct 18 p 100
Mills in Pittsburgh Ordnance District Double Jap Production, Aug 23 p 126
Norris Decries Loose Talk on West Coast Steel Situation, Nov 8 p 102
Operations to Recover Rapidly Following Brief Intermission, Aug 16 p 102
Order Duplication Seen as Important Contributing Factor to Inflation, Aug 9 p 84
Oregon Mills Land $2 Million Cash Order to French and Russian Governments, Nov 15 p 90
Peacetime Rate Significant, Nov 1 p 98
Product Summary, 1940-44, July 12 p 94
Reacts to OPA Steel Position, Nov 29 p 96
Reconversion Problems Begin, Aug 23 p 110
Ruhr Mills Fall into British Occupation Zone, Aug 9 p 107
Russia Rebuilding to See Modernized Production Units, Oct 4 p 144
Russian Steel Production Methods at Magnitogorsk Works Cited, Dec 13 p 171
Russians Rehabilitate Destroyed Steel Works in Ukrainian S.S.R., Nov 1 p 122
Rustless-Armco Plan for Merger Announced, Sept 27 p 95
Sharon Steel Purchases Carnegie's Farrell Works; Takes Over on Dec 15, Nov 15 p 108
Sheet and Strip Inventory Limit Cut to 45 Days, July 5 p 104
Shipments in August Drop 13.7 Pct Due to War Cancellations, Oct 25 p 78
Simplified Practice for Certain Steel Shapes Now Ready, Sept 13 p 146
Small Companies Lose by Sale of C-I Farrell Works, Dec 13 p 112
Small Producers to Reject Price Offer, Nov 29 p 96
Snow and Cold Gang Up on Steelmaking Operations*, Dec 27 p 89
Soviet Industry Shifted Eastward During the War, Nov 29 p 107
Status of DPC Metalworking Plants, Oct 4 p 114
Steel Developments Featured in Institute Yearbook, Sept 20 p 140
Stop-Work Schedules Issued by WPB and OCS, Aug 16 p 104B
Strike Date Causes Rush for Deliveries, Dec 27 p 96
Strike May Call for CPA Allocations, Dec 27 p 114
Surplus Steel Easing Shortage for Alert Buyers, Dec 27 p 74
Thirty Day Lead Time Requires Reopening of July and August Books, July 19 p 106
Timken Reports Loss of Allov Steel and Bars Due to Strike, Nov 22 p 120
Truman Confers with Fairless and Snyder, Nov 1 p 98
U.S. Ranked Fifth in Prewar Steel Exports, Aug 16 p 104G
U.S. Steel Logical Operator of Geneva Plant, Symington Tells Committee, Nov 8 p 109
U.S. Steel Corp. Shipments, June, July 19 p 95; July, Aug 16 p 99; August, Sept 13 p 97; September, Oct 18 p 95; October, Nov 15 p 105; November, Dec 13 p 105
U.S. Steel Throws Geneva Back in Washington's Lap, Aug 16 p 88
United Steel Companies, Ltd. Outlines Modernization Plans, Dec 20 p 101
Unrated or Z Orders Require No Deferment, July 12 p 92
Volta Redonda Mill Production Delayed, Dec 20 p 108
WPB Four-Point Program Attempts to Combat Tight Flat-rolled Situation, July 12 p 87
WPB Freezes Third Quarter Mill Order Books on Some Sheet and Strip, July 12 p 87
WPB Program to Increase Sheet and Strip Output Faces Tough Sledding, Manpower to Be Factor, July 19 p 80

WPB Steel Div. Slashes Paper Work Required From Industry, Sept 20 p 117
WPB Tells Fabricators to Limit Steel Needs, Nov 8 p 164
Warehouse Deliveries in Third Quarter Small on Unrated Business, July 12 p 95
Warehouse Statistics Show Distribution of Products During War, Oct 4 p 126
Warehouses Buying Iron and Steel From Other Sources, Oct 25 p 80
Warehouses Report Steel Stocks Low, Dec 27 p 99
Wartime Steel Production and Consumption Reported by Krug, Oct 25 p 107
Washington Steel Corp. Formed to Produce Stainless Sheet and Strip, Oct 18 p 101
Weirton Installing Cold Reduction Mill, July 12 p 89
West Coast Bouncing Off VJ-Day Ropes, Aug 23 p 94
West Coast Interest's Ownership of Steel Mills Favored by Symington, July 26 p 108
West Coast Production Down, Consumption Low, Sept 20 p 96
West Coast "Tighter Than at Any Time During the War", Nov 29 p 78
Western Independent Steel Buyers Threaten to Boycott Eastern Steel Interests, Aug 30 p 66
Western Steel Problem, Oct 11 p 92
Western Syndicate Proposal Faces Mixed Reactions, July 26 p 92

Steel Industry, Labor:
Bethlehem Turns Down $2 a Day CIO Demand, Nov 1 p 94
Canadian Mills Join U.S. in Search for Skilled Labor, Sept 27 p 100
Canton Area Sees Opening of Local CIO Wage Increase Drive, Oct 4 p 112
Employment, Hours and Wages, May, July 19 p 95; June, Aug 16 p 99; July, Oct 4 p 128; August, Oct 18 p 95; September, Nov 22 p 107; October, Dec 20 p 97
Fairless Says Ceilings and Wage Stabilization Prevent $2 Day Increase, Oct 25 p 99
55,550 More Workers Needed AISI Survey Reveals, Oct 4 p 128
Firms Expected to Reject $2 Increase, Oct 18 p 97
Foremen's Assn. Gaining Ground in Organization Drive, July 12 p 88
Price-Wage Shadowboxing, Sept 20 p 110
Schwellenbach Urges Arbitration on U.S. Steel Case, Nov 8 p 107
Scrapping of Wage Controls Primes CIO for General Increase Fight, Aug 23 p 117
Strike Vote to Bring Wage Question to a Head, Nov 1 p 93
Union Wage Action Marks Time for Auto Action, Dec 13 p 111
Wage-Price Formula Will Not Affect Price Increases, Nov 8 p 107
WLB Steel Commission at Pittsburgh Makes New Wage Rulings, July 19 p 104
Weir of National Steel Refutes USWA Statistics in Report to Employees, Nov 22 p 110

Steel Industry, Postwar:
Civilian Order Pattern to Shape Up Quickly After Reconversion, Aug 16 p 101
Fontana Operation Depends on Lower Cost, Nov 29 p 102
Market Estimates in 1947, Aug 23 p 61
Scrap Prices May Delay Developments in Openhearth Practice, Aug 16 p 108
Steel to Hold Its Position in Postwar Period, Sept 20 p 120

Steel Industry, Prices:
ABC of Basing Point System*, Oct 4 p 120
Auto Firms Re-entry into Sheet Market Revives Price Talk, July 5 p 106
Auto Price Ceilings Seen Influencing a Steel Price Advance, Nov 22 p 86
Basic Change in Pricing System May Be Underway in 30 Days, Sept 27 p 95
Basing Point Change Imminent, Sept 20 p 109
Casting Products Advanced, Dec 6 p 120
Chronology of Price Case, Nov 29 p 95
Cold Finished Steel Price Change Seen, July 19 p 104
European Steel Marts Still Reflect Supply and Price Dislocation, Sept 6 p 124
FarReaching Freight Rate Changes Agitated*, Nov 29 p 97
Freight Rates, Geneva to Pacific Ports, Proposed by Prickett, July 12 p 74
High British Costs Worrying Consumers of All Steel Products, Sept 20 p 117
High British Prices Undergoing Some Adjustment, Nov 22 p 117
Increases Depend on Wage Action, Oct 11 p 82
Industry Reacts to OPA Position, Nov 29 p 96
ICC Orders Reduction of Freight Rates for Armor Plates and Shapes, Sept 20 p 161
Ledloy Extras Increased, Oct 18 p 97
Non-integrated Firms Protest OPA Methods on Price Maximums, Aug 9 p 104
Non-integrated Mills Price Action Soon to Be Announced by OPA, Dec 27 p 90
OPA Action Is a Dud, Nov 29 p 95
OPA Projects Meetings on Price Action, Dec 6 p 122
Premium Price for Steel Producers Suggested, Dec 20 p 106
Price Evolution, Sept 20 p 109
Price Struggle Now Raging in England, Nov 29 p 98
Price-Wage Shadowboxing, Sept 20 p 110
Scrap Demand in Southern California Might Firm Market to Increase Postwar Pacific Coast Steel Costs, July 5 p 88
Small Producers Ask Control of Prices, Dec 13 p 113
Small Producers Ask for Price Rise, Dec 6 p 118
Stainless Base Price Move Boon to Consumers, Sept 13 p 99
Stainless Steel Basing Points, Sept 13 p 99; Sept 20 p 112
Wage-Price Formula Will Not Affect Steel Price Increases, Nov 8 p 107
Warehousemen and Jobbers Now Can Pass on Increases, July 26 p 113
Wire Products and Template Prices Drop in Spain, Sept 20 p 115

Steel Products Warehouse Assn., Inc.:
Elects Regional Officers, Nov 15 p 160; Dec 6 p 171; Dec 20 p 130

Steep Rock Iron Mines, Ltd.:
Output to Exceed 1000 Tons Daily in Near Future, Sept 6 p 125

Steinle Machine Co.:
Thread Roller*, Aug 9 p 76

Sterling Engine Co.:
Large Order Backlog, Sept 27 p 130

Stewart Warner Corp.:
Lubrication Cart*, Sept 13 p 75
Materials Pump*, Sept 20 p 86

Stockpiling:
Alloy Steel Scrap at Ravenna Ordnance, Sept 20 p 168
Bethlehem Steel Stockpiles Wartime Ore Reserves From Chile, Nov 1 p 100
Bills Governing War Materials Up for Consideration, Nov 8 p 90
First Refrigerators to Be Reserved for War Needs, Aug 9 p 106
Materials Stockpiling Exception Clarified by Interpretation, July 19 p 100
Military Affairs Committee Reports on Bill, Dec 13 p 86
Reconversion Metals Will Be Stockpiled, Nov 1 p 108
Strategic Materials Figures Released by Metals Reserve, Nov 22 p 126
SPA Extends Time, Dec 27 p 90
Tin, Manganese and Copper Shrinkages in Strategic Stocks, Dec 13 p 173

Stokes, F. J., Machine Co.:
Combination Press*, Dec 27 p 62

Stonhard Co.:
Non-Skid Coating, Nov 8 p 82

Strainer Products Corp.:
Coolant Strainer*, Aug 23 p 84
Strainer*, Sept 13 p 73

Straining of Weld Metal During Cooling, by E. P. DeGarmo*, Dec 20 p 48

Strikes:
Auto Union Plans Strike in All General Motors Plants, Sept 20 p 88
CPA Modifies Inventory Curbs on Strike-Bound Plants, Dec 20 p 112
Coal Strike Cutting Youngstown Operating Rate; Furnaces Close, Oct 4 p 112
Coal Strikes Slow U.S. Steel Production Rate, Oct 11 p 98
Delaying Auto Production, Sept 6 p 131
Foundry Workers Strike in Chicago, July 26 p 113
G.M. Situation Rapidly Hardening Into an Impasse*, Dec 6 p 86
J&L and National Tube Affected, Sept 27 p 97
J&L Case Sets Pattern for the Coal Industry, Oct 11 p 99
NLRB Turns Down Republic Steel's Request to Dismiss Strike Vote Petition, Nov 15 p 86
Outlaw Strike Costs Carnegie 25,500 Tons of Steel, July 12 p 90
Petroleum Strike Threatens Carnegie, Sept 27 p 95
Prime Issue in G.M. Is Not Wages, But Union's Voice in Setting Prices*, Nov 29 p 70
Soaking Pit Strike at Edgar Thomson Stops Steel Output, Aug 2 p 101
Supervisors Tie Up Pennsylvania Coal Mines, Sept 27 p 96
Thomas Promising Many UAW Strikes Following VJ-Day, July 26 p 109
Trent Seen Dictating Labor Legislation*, Dec 13 p 109
UAW on the Retreat for First Time Since 1937; Ford's Aggressive Attitude Puts Union on the Defensive, Dec 13 p 82
Vote Date Set for G.M., Sept 27 p 97
Wildcat Strike Halts Operations at Inland, Aug 16 p 103
(See also Labor)

Stripping:
(See Cleaning and Finishing)

Struthers Iron & Steel Co.:
Anna Furnace Sold to Hillman Interests, Oct 18 p 126

Studebaker Corp.:
Double Production Capacity Scheduled, Sept 27 p 74
1946 Car Models Announced, Sept 20 p 90
Settles Truck War Claims, Dec 20 p 134
Truck Contracts Cancelled by Army, July 5 p 116

Sturdy-Built Equipment Corp.:
Metal Parts Cleaner*, Sept 20 p 84

Sub-Critical Annealing, by E. E. Howe*, Aug 9 p 52

Sumberg, Theodore A.:
Export Subsidies Program Will Menace American Industries, July 5 p 110A

Sundblad, F. W.:
Scrap Prices May Delay Postwar Developments in Openhearth Practice, Aug 16 p 108

Sundstrand Machine Tool Co.:
Fin Milling Machine*, Aug 9 p 77

Superior Mfg. Co.:
Air Hammer*, Oct 25 p 71

Superior Steel Corp.:
Gilded Metal Becomes Surplus Material, July 19 p 101

Supersonics:
New Type Wind Tunnel Built by Pittsburgh-Des Moines Steel Co., Aug 2 p 130

Surface Combustion Corp.:
Bench Furnace*, Nov 15 p 79
Dewpoint Recorder*, Nov 15 p 78
Preventing Surface Decarburization in Large Shaved Transmission Gears*, Nov 29 p 56

Surplus Property Administration:
Bickering With RFC Delays Disposals, Dec 6 p 111
Burrows Appointed Budget Control Disposal Officer, Dec 13 p 88
Disposal of $15 Billion Surplus Declarations Expected Out of Estimated $32.6 Billions*, Dec 27 p 70
Improper Disposals of Surplus Goods to Be Investigated, Dec 6 p 172
Internal Trouble Seen Delaying Machine Tool Sales Ruling, Dec 6 p 124
Plans Regional Disposal Agencies, Nov 29 p 106
Recommends Some Magnesium Producers Be Kept in Partial Use, Dec 20 p 78
Surplus Machine Tool Dealers to Get 12½ Pct, Nov 29 p 99
Surplus Metals Allocated, Dec 6 p 146
Symington Considers Private Magnesium Plants Adequate for Postwar, Dec 13 p 118
Symington Leaves Door Open for Geneva Steel Plant Disposal, Oct 18 p 106

Surplus Property Board:
Alcoa Charges Program for Plant Disposal Seeks to Destroy It, Oct 25 p 105
Committee Recommends SPB Control Foreign Disposals, July 19 p 108
Compliance Enforcement Div. Set Up to Prevent Fraud, Nov 8 p 110
Heller Urges West to Buy Geneva, With Kaiser as Production Manager, July 19 p 84
Light-Metals Plants Disposal Plan Presented, Sept 13 p 105
Personnel, July 12 p 95
Plant Disposal Permit Below-Maximum Price Awards, Sept 13 p 110
Scored by Segal, Machinery Institute Head, Over Machine Tool Problem, July 12 p 132
Surplus Plants Ruling, Sept 13 p 97
(See also Surplus Property Administration)

Surpluses, Government:
ATS to Scrap $50 Million of Material, Oct 11 p 107
Army Declares 252 Facilities Surplus, Sept 6 p 154; 194 Plants, Dec 13 p 119
Army Property Disposition Reported Paper Work Problem, Dec 13 p 144
Army Specifies 252 Surplus ASF and AAF War Plant Facilities, Aug 30 p 83
Army Surpluses Offered, Dec 27 p 97
Buick Plant to Handle Sale of Surplus Machine Tools, Nov 22 p 123
Buoys Offered, July 12 p 138
Canada Received $34,173,000 for Surplus Disposal, Nov 8 p 120
Cartridge Cases Offered, Dec 6 p 126
Committee Recommends SPB Control Foreign Disposals July 19 p 108
Data Itemized, Aug 9 pp 86, 114
Demand for Single Civilian Property Committee Grows, Oct 11 p 84

Disposal of Steel and Metals Discussed by H. W. Cornell, Dec 20 p 128
Extruded Metals Defense Corp. Plant Offered for Sale, Dec 20 p 108
Gilded Metal Becomes Surplus Material, July 19 p 101
Identification of Material*, Oct 18 p 53
Industrial Plants and Sites Declared Available for Sale, July 19 p 100; Sept 13 p 106; Dec 6 p 152;
Inventories Freed for Production, Aug 30 p 91
Kalunite, Inc., and Brewer Mfg. Classed as Surplus by WPB, Aug 9 p 90
Machine Tool Dealers to Get 12½ Pct, Nov 29 p 99
Marine Surplus Disposals, Aug 30 p 77
Nonferrous Metal Plants for Sale, Nov 15 p 126
Plant Disposal Permit Below-Maximum Price Awards, Sept 13 p 110
RFC Approves Proposal to Allow Tool Dealers to Aid in Surplus Sales, Nov 29 p 108
RFC Operating Nationwide Disposal Agencies, July 19 p 124
RFC Plant Disposal Report Shows Bethlehem Buys at 20 Million, Sept 27 p 98
RFC Urges Junking Small Lots, Aug 9 p 102
Red Tape Hinders Sales, Dec 13 p 148
Sale of Wartime Surpluses in Chicago, Dec 6 p 116
Sale Reached $133,462,000, Aug 2 p 120
Sales Realize 50 Pct, Sept 6 p 134
Snyder Proposes War Surpluses Be Used for Trading, Oct 11 p 108
Solution to Surplus Machine Tool Problem Outlined by Distributors' Assn., Nov 29 p 100
SPA Expects to Dispose of $15 Billion Out of Estimated $32.6 Billion*, Dec 27 p 70
SPA to Investigate Improper Disposals of Surplus Goods, Dec 6 p 172
Tools Still in the Doldrums, Nov 22 p 124
Wardwell Warehouse Covers 92 Acres of Space, Aug 2 p 112
Warehouse Being Established at East Chicago, Aug 2 p 130
Witnesses Conflict on Desirability of Central Inventory, Aug 9 p 110

Sutherland, William M.:
New Heat-Treat Neutralizing Chemical*, Oct 4 p 82

Sweden:
New Pig Iron Production Methods Sought Due to Costs, July 5 p 122
Nonferrous Metals Production, 1936-41, Dec 13 p 124
Trying Straw for Fuel, Dec 13 p 96

Sweetser, Ralph H.:
Moving the Pembroke Blast Furnace From Florida to Texas*, Nov 15 p 66

Switches:
Foot Switch, General Control Co.*, Nov 22 p 80
Pressure Detector, Cook Electric Co., Dec 27 p 64
Pressure Switch, Walter Kidde & Co.*, Sept 13 p 74
Switch Copper, Revere Copper & Brass, Inc.*, July 12 p 64D

Sylvania Electric Products, Inc.:
Fluorescent Lamp, Aug 23 p 82

Symington Gould Corp.:
Substantial Cutbacks Offset by New Orders, July 12 p 126

Symington, W. Stuart:
Favors West Coast Interest's Ownership of Steel Mills, July 26 p 108

T

Taconite:
(See Ore, Ferrous)

Taft, Sen. Robert A.:
Proposal Calls for OPA Price Rises to Offset Rising Costs, Dec 6 p 156

Talk-A-Phone Mfg. Co.:
Power Booster, Dec 6 p 83

Tanks:
Casting Output Replaced by RR Order, July 12 p 90
Cutbacks Continue, July 5 p 118
Fisher Body Arsenal Shuts Down, Oct 18 p 104

Tanks, Storage:
(See Containers)

Tapping:
Attachment, Douglas Machinery Co.*, Sept 6 p 98
Die Tapping Machine, Le Maire Tool & Mfg. Co.*, Aug 9 p 76

Tata Iron & Steel Co., Ltd.:
Segregation in a Rimming-Steel Ingot, Nov 15 p 70

Tatman, Max E., and Miller, R. A.:
Fabricating High-Strength Aluminum Alloys*, Dec 27 p 40

Tauber, Fred:
Avoiding "Smut" From Aluminum Etchants, Aug 2 p 57

Taxation:
Bill Raises Exemption of Tax Under Excess Profits to $25,000, July 12 p 102
Bureau of Internal Revenue to Check Claims for Inventory Reduction, Nov 22 p 114
Corporate Tax Adjustment Bill Awaits Truman Signature, July 26 p 112
Excess Profits Tax Repeal Urged by Senator George, Oct 18 p 104
Less Than 5-yr Write Off Allowed on Plants, Oct 11 p 112
Universal Steel Co. Decision Lowers Tax on Undistributed Profits, Sept 13 p 101
War Exchange Tax Elimination Will Benefit Canadians, Oct 25 p 106

Taylor, G. B., and Rambush, N. E.:
Behavior of Charge Material in the Cupola, Nov 15 p 65

Techtmann Industries, Inc.:
Bank-Type Resistor*, July 12 p 64D

Tennessee Coal, Iron & Railroad Co.:
Plans to Open New Coal Mine, Oct 4 p 114

Tenney Engineering, Inc.:
Thermostatic Expansion Valve*, Nov 8 p 83

Terneplate:
Quality of Terneplate, Dec 27 p 44

Testing and Inspection:
Adjustable-Range Force-Measuring Spring*, Sept 20 p 63
Aging Bath for Rubber and Elastomers, Precision Scientific Co.*, Nov 1 p 70
Alnico Horseshoe Magnet Locates Casting Flaws, Aug 2 p 47
Assessing Wear Due to Friction and Corrosion*, Oct 25 p 65
Continuous Gaging With X Ray Micrometer*, Nov 29 p 50
Controlling Quality of Steel Castings*, July 19 p 50
Deflectometer for Plastics, Baldwin Locomotive Works*, Nov 1 p 68
Electrolimit Comparator, Pratt & Whitney Div.*, Dec 20 p 70
Electrolytic Manganese vs. Ferromanganese Addition Agents, Dec 6 p 80
Fatigue Failures of Mechanical Materials Emphasized by Dr. Horger*, Nov 22 p 158
Fatigue Testing of Sheet Metal*, Sept 27 p 84
Fluoroscopy of Light-Alloy Castings*, Nov 1 p 54
Gas Analyzer and Recorder, Bailey Meter Co., Nov 1 p 70
Grating Spectrograph, A. R. L. Dietert*, Nov 1 p 69
Handy Gaging Tool*, Nov 29 p 48
Hardness Testing Hammer, Steel City Testing Laboratory*, Nov 1 p 68
Hypersonic Analyzer Betters Testing Technique*, Dec 13 p 74
Improved Excitation of Arc Spectra for Spectroscopes, Oct 4 p 78
Interferograph Developed by Standards Bureau, Oct 18 p 63
Low-Temperature Behavior of Ferritic Steel*, Oct 4 p 69
Machine for Plastics, Plywood and Lighter Sheet Metals, Baldwin Locomotive Works, Aug 16 p 76
Magnetic Method for Diamond Hardness Measurements, Nov 29 p 65
Magnetic Particle Detection of Retained Austenite and Carbide Segregation*, Oct 25 p 46
Marine Tests Rate Alloy Performance*, July 26 p 62
Measuring Wall Thickness by Gamma Rays*, Aug 30 p 36N
Metal Surface Testing Equipment and Procedures, Sept 27 p 68
Metallic Impurities in Steel, Dec 6 p 71
Microscopy of Lead-Bearing Steels and Irons, July 12 p 49
Micro-Spectrographic Method for Steel Segregates, Dec 13 p 63
Million Volt Betraton Opens Possibilities in X Ray Penetration, Nov 22 p 153
Photo-Grid Techniques for Measuring Distortion*, Nov 8 p 78
Pilot Plant to Study Concentration, Milling and Processing Established at Allis-Chalmers*, Nov 29 p 138
Portable AC Test Set, General Electric Co., Oct 18 p 72
Pressure Gage Tester, Mansfield & Green*, Aug 23 p 84
Ram Pacer, Baldwin Locomotive Works*, Nov 1 p 69
Rapid Ore Testing, Nov 29 p 63
Single-Blow Impact Test for Cast Iron, Nov 22 p 78
Spectroscopic Control of Tropenas Converter, Nov 15 p 63
Spot Test for Nickel in Steel, Sept 13 p 54O
Spot Test Identification of Metal Surfaces, Sept 6 p 71
Straining of Weld Metal During Cooling*, Dec 20 p 48
Tap Carbon Tests Speeded Up by Novel Procedure at National Tube, July 12 p 110
Tests on Iridite Finish for Cadmium and Zinc Plated Steel, July 26 p 61
Thickness and Porosity Tests of Plated Surfaces, Sept 6 p 72
Torque Tester, John Chatillon & Sons*, Sept 6 p 100
Transfax Simplifies Strain Analysis Studies*, Nov 8 p 81
Trepanning Welded Joints for Defects*, Sept 6 p 80
Vibration Test Table, L. A. B. Corp.*, Nov 1 p 69
X Ray Standards for Purchasing Castings*, Nov 22 p 62
(See also Instruments)

Tests on Iridite Finish for Cadmium and Zinc Plated Steel, by K. E. Dorcas and N. H. Simpson, July 26 p 61

Texaco Development Corp.:
Measuring Wall Thicknes by Gamma Rays*, Aug 30 p 36N

Thomas Machine Mfg. Co.:
New Type Plate Edger Prepares Steel for Automatic Welding, Nov 8 p 146
Plate Duplicator*, Dec 27 p 63

Thompson Grinder Co.:
Contour Grinder*, Sept 27 p 70

Thompson Products, Inc.:
Buys Tapco Plant, Oct 11 p 78
CIO Again Loses Vote, Nov 1 p 94
Forms Five Divisions, Oct 4 p 117

Thomson-Gibb Electric Welding Co.:
Welding Press*, Oct 11 p 74
Wire Cable Welder*, Oct 11 p 72

Thomson Industries, Inc.:
Ball Bushing*, Sept 6 p 99
Drillhead*, Aug 30 p 54

Threading:
New Technique*, Sept 27 p 59

Throwing Power of Anodizing Baths, by R. S. Herwig and Albert Leigh*, Dec 20 p 51

Tillson, E. D.:
Uncommon Applications of High-Frequency Heating*, Oct 4 p 72

Time Allowances for Drill-Press Work, by C. T. Post*, Sept 20 p 58

Time Studies:
(See Management)

Timken Roller Bearing Co.:
Earnings, First Nine Months, Dec 13 p 172
Electronic Gaging Device Developed for Blind, Aug 16 p 116
Loss of Alloy Steel and Bars Due to Strike, Nov 22 p 120
Rapid Spot Test for Nickel in Steel, Sept 13 p 54O
10 Pct Wage Increase for All Employees, Sept 13 p 108

Tin:
Billiton, D.E.I., Facilities Good, Dec 13 p 124
Bolivian Pact to Add to U.S. Stocks, Sept 27 p 136
British Optimistic About Supplies, Dec 20 p 116
Conquest of Malay and Indies Will Not Ease Shortage, July 19 p 97
Domestic Consumption, 1942-45, July 19 p 98
Fusion Brightening of Electro-tinplate*, Oct 18 p 57
Great Britain to Send Us 5000 Tons Pig Tin From Stock, Oct 11 p 104
Imports into U.S., 1942-45, July 19 p 98
Imports Returned to Government Control, Dec 6 p 126
Less Tin on Food Cans, July 19 p 146
Milk Can Quotas Based on Prewar Use, Oct 11 p 136
Ore Buying Mission in Malaya, Nov 22 p 126
Outlook Improved, Dec 27 p 102
Permitted in Tubes, Body Solder, Dec 20 p 106
Pig Tin Reserves, 1942-45, July 19 p 97
Restrictions Tightened, Aug 16 p 152
Salvage Reaches 16,000 Tons by June, Sept 27 p 136
Secondary Tin Recovery Declines 14 Pct in 1944, Aug 9 p 136
Shortage Dictating Withdrawals From Stockpiles, Aug 30 p 62
Stock Dwindles Somewhat, Nov 1 p 108
Tin Undercoats for Painted Steels Improves Corrosion Resistance, Dec 6 p 64
(See also Nonferrous Metals)

Tin Mill Products Corp.:
Starts Warehouse, July 26 p 112

Tin Research Committee:
The Quality of Terneplate, Dec 27 p 44

Tinnerman Products, Inc.:
Steel Fastener*, Oct 25 p 72

Tinplate:
British Exports Renewed on Greater Than Prewar Basis, Sept 27 p 101
Colombia Buys From U.S., Nov 22 p 121
Record Set by C-I Irvin Works, July 19 p 101

Titan Metal Mfg. Co.:
Will Act as Brass Export Agent, Sept 13 p 152

Titanium:
In Chrome-Manganese Stainless Steel*, Aug 9 p 62

Titanium in Chrome-Manganese Stainless Steel, by G. F. Comstock*, Aug 9 p 62

Toledo Stamping & Mfg. Co.:
New Threading Technique*, Sept 27 p 59

Tools, Cutting:
Abrasive Tool, Master Specialty Co.*, Aug 30 p 54
Adjustable Spotfacers, Robert H. Clark Co.*, Dec 20 p 71
Band Saw and Metal Safety Guide, Boyer-Campbell Co.*, Sept 6 p 98
Carbide Tipped Milling Cutters, Nelco Tool Co.*, Sept 6 p 97
Cushioned High-Cobalt Shaper Tools, Nov 29 p 61
Cutter Design Evaluated by Production Runs*, Nov 22 p 54
Diamond Hand Hones, Bay State Abrasive Products Co.*, Oct 25 p 70
Diamond Tools, Selection and Use*, (2 Parts) Aug 30 p 38; Sept 6 p 94
Diamond Wheel Coolant, Industrial Abrasives, Inc., Aug 30 p 54
Die Head, Landis Machine Co., Dec 20 p 71
Dressing Tool, Industrial Abrasives, Inc., Aug 30 p 54
Effect of Work Position in Face Milling of Steel With Carbide Cutters*, (2 Parts) See reprint Jan. 24, 1946 p 64; Dec 13 p 64
Flame Cut-Cinder Car Rack*, Nov 1 p 49
Follower Application*, Turchan Follower Machine Co., Sept 6 p 98
German Cutting Tool Steel Substitutes Revealed Inferior, Nov 22 p 155
Hardsteel Cutting Tools*, Dec 13 p 68
Knurling Tool, Boyar-Schultz Corp.*, Sept 6 p 99
Lewis Foundry Develops Scrap Shears, Nov 8 p 121
Miller Lathe Attachment, Globe Products Mfg. Co.*, Aug 30 p 54
Roller Attachment for Shear Prevents Scratches*, Aug 23 p 63
Rotary Cut-Off Machine, Pines Engineering Co., Sept 27 p 72
Rotary File Kit, Nicholson File Co.*, Dec 20 p 72
Sharpening Attachment, Le Brun Mfg. Co., Sept 6 p 98
Slitting Saw, Gay-Lee Co.*, Dec 20 p 71
Thread Milling Cutters, Detroit Tap & Tool Co., Sept 6 p 97
Tilting Hot Saw, Mackintosh-Hemphill Co.*, Sept 27 p 71
(See also Carbide Tools)

Tools, Hand:
Air Hammer, Superior Mfg. Co.*, Oct 25 p 71
Diamond Hones, Bay State Abrasive Products Co.*, Oct 25 p 70
Multi-purpose Screwdriver, Standard Pressed Steel Co.*, Aug 16 p 78
Tool for Indenting Electrical Connectors, Burndy Engineering Co., Inc.*, Oct 18 p 72
Torque Wrenches, Jo Mfg. Co.*, Oct 25 p 70

Tools, Machine:
(See Machine Tools)

Tornblad & Lees:
Borings Sintered by Greenawalt Machine, Dec 20 p 50

Tower, Walter S.:
Earnings of Steel Companies Are Running into the Red, Dec 13 p 163

Towmotor Corp.:
Industrial Tractor, Oct 4 p 88

Trane Co.:
Propeller Type Fan, Aug 23 p 84

Transportation:
Chicago Assn. of Commerce Urges National Transport Changes, Nov 22 p 123
Gas Ranges Shipped by Airway Freight, July 19 p 86
Loading Practice for Air Cargo Seen as Important Time and Cost Factor, Dec 13 p 120
(See also Railroads)

Transue & Williams Steel Forging Corp.:
Estimating Die Costs*, Nov 29 p 44

Trepanning Welded Joints for Defects, by J. B. Arthur and M. H. MacKusick*, Sept 6 p 80

Trucks:
All-Wheel Drive Trucks Announced by Mamon-Herrington Co., Inc., Aug 2 p 97
Reynolds Aluminum Alloy Truck*, Nov 15 p 121
Watkins Body Corp. Expands, July 12 p 92
(See also Materials Handling)

Truscon Steel Co.:
Back Wages to Be Paid, Oct 11 p 102

Tubes, Pipe:
Engineering Data on Seamless Tubes Ready, Sept 6 p 134
J&L to Shut Down No. 4 Seamless Mill at Aliquippa Works, Nov 15 p 123
United Tube Opens Cleveland Plant, Sept 20 p 111

Tungsten:
Order Revoked, July 12 p 118
Tungsten Carbide Machine Parts*, Sept 27 p 55
Tungsten Tool Steels Overtaking Molybdenum, Nov 29 p 110

Tungsten Carbide Machine Parts, by S. H. Brams*, Sept 27 p 55

Tungsten Carbide Tool Co.:
Core Drills*, Oct 25 p 72

Turbines:
ASME Group Sees Atomic Power for Gas Turbine Drive, Sept 13 p 126
Navy's First Gas Turbine Unit Unveiled; 2500 Hp for Ship Propulsion*, Aug 2 p 102

Turbosupercharger Production Details, by S. H. Brams*, Sept 6 p 88

Turchan Follower Machine Co.:
Follower Application*, Sept 6 p 98

Turco Products, Inc.:
Air Filter Cleaner, Aug 23 p 84
Burner Tip Reclaimer*, Oct 11 p 74
Cold Tank Cleaner*, Dec 13 p 79
Lubricant, Botlube, for Conveyors*, Oct 4 p 86
Steam Cleaning Compound, Aug 23 p 83

Turner Bros., Inc.:
Keyless Chuck Grip, Oct 25 p 71

Twin-Arc System Improves Welding Efficiency, by M. H. MacKusick*, Sept 27 p 58

Twin Disc Clutch Co.:
Air-Actuated Disk Clutch*, July 12 p 64C

Twin-Motor Drives in Hot Reducing Mills, by F. W. Cramer*, Oct 11 p 58

U

Uncommon Applications of High-Frequency Heating, by E. D. Tillson*, Oct 4 p 72

United Engineering Trustees:
Elects New Officers*, Nov 15 p 160

United States:
Broad Peacetime Economy Program Mapped by President, Sept 13 p 104
Government-Industry-Labor Face Mutual Responsibilities, Sept 13 p 107
Income to Chicagoans Reached $7.6 Billion, 1939-VJ-Day, Oct 11 p 105
Raw Materials Depletion; Waggaman Submits National Plan, Oct 18 p 146
War Demands Have Depleted Minerals Resources, Oct 18 p 150

U.S. Steel Corp.:
Biddle Aims Heavy Blow at Hopes for Geneva, July 5 p 102
Capacity Possibly Smaller Postwar, July 5 p 103
Coal Strikes Slow Production Rate, Oct 11 p 98
Earnings, Third Quarter 1945, Nov 8 p 117
Fairless Says Ceilings and Wage Stabilization Prevent $2 Day Increase, Oct 25 p 99
Gerrard Steel Strapping Co. Develops Free-Fall Cargo Container, Nov 1 p 128
Re-employment of Vets Reaching 13,000, Nov 1 p 130
Schwellenbach Urges Arbitration on Wage-Increase, Nov 8 p 107
Shipments, June, July 19 p 95; July, Aug 16 p 99; August, Sept 13 p 97; September, Oct 18 p 95; October, Nov 15 p 105; November, Dec 13 p 105
Strike Vote to Bring Steel Wage Question to a Head, Nov 1 p 93
Throws Geneva Back in Washington's Lap, Aug 16 p 88
USWA-Steel Corp. Board Set Up, July 19 p 102
WLB Leaves Severance Pay Disagreement to Collective Bargaining, Nov 22 p 111

U.S. Steel Supply Co.:
New Steel Warehouses at Cleveland, Dec 27 p 92

U.S. Strategic Bombing Survey:
Allied Bombings of Germany's Steel Plants Not Decisive, Nov 22 p 148

United Steel Companies, Ltd.:
Outlines Modernization Plans, Dec 20 p 101

United Tube Corp.:
New Plant at Cleveland, Sept .20 p 111

Universal Cyclops Steel Corp.:
Titusville Established Stainless Basing Point, Nov 1; 98

Universal Engineering Co.:
Drill Press Turret Head*, Sept 6 p 97

Universal Fittings & Scaffolding Co.:
Portable Scaffold, Aug 16 p 78

Universal Safety Equipment Co.:
Ear Protector, Aug 23 p 84

Universal Steel Co.:
Decision Lowers Tax on Undistributed Profits, Sept 13 p 101

Universal Machine Co.:
Pocket Size Standards*, Dec 20 p 70

Upton Electric Furnace Div.:
Salt Bath Furnace*, Nov 15 p 80

V

Valves:
Butterfly Valves, S. P. Kinney Engineers*, Nov 15 p 80
Eatonite, New Facing Alloy*, Oct 25 p 58
Fluid Lever, Numatics*, Aug 23 p 82
4-way Control, Modern Products, Ltd.*, Nov 22 p 81

Vanadium:
In Cast Iron, Dec 13 p 78

Vance, E. R., and Gonser, H. S.:
Rapid Spot Test for Nickel in Steel, Sept 13 p 54O

Van Deventer, J. H.:
A Blue Shirt in Heaven, Nov 8 p 55
Butter from Coal and Steel from Milk, Sept 6 p 67
The Can and Can't Be Doners, July 19 p 45
Competition and Employment, Aug 9 p 49
Do Dreams Come True? Sept 27 p 46
An Editor Reads the Ads, July 12 p 43
Employment and Employables, Sept 13 p 45
The Four-Horned Dilemma, Dec 6 p 55
Getting Back to Arithmetic, Dec 20 p 45
How to Avoid a Headache, Nov 29 p 41
The Job Changeover, Aug 30 p 31
Labor Trouble in the Barnyard, Nov 1 p 43
Let's Utilize Productivity, Dec 13 p 51
Measurement and Control, Aug 2 p 39
More or Less About More for Less, Oct 4 p 61
Out of the Frying Pan, Dec 27 p 37
Peace—It's Wonderful, Aug 16 p 47
A Policeman Needs No Buzz-Bomb, July 5 p 51
The Quarrelsome Brothers, Nov 22 p 51
The Rabbits Multiply, Sept 20 p 55
Social Security for Employers, Oct 25 p 43
Toward More Jobs and More Freedom, Oct 18 p 47
United We Stand, But—, Oct 11 p 47
Wages and Hours on Steel, Nov 15 p 51
Water and Other Pressures, July 26 p 49
What Does It Cost? — That's the Answer, Aug 23 p 55

Van Norman Co.:
Milling Machine*, Nov 29 p 66

Van Slyke, W. R.:
Iron Ore Conservation Measures Offered to Krug, Aug 16 p 147

Vatchagandhy, J. S., and Contractor, G. P.:
Segregation in a Rimming-Steel Ingot, Nov 15 p 70

Versatile Stowage with Eight-way Pallets, by Lt. Templeton Smith*, Aug 30 p 34

Vickers Armstrongs, Ltd.:
Skin Heating*, Sept 6 p 86

Victory Mfg. Co.:
Blind Bolt Assembly*, Sept 6 p 99

W

Wabash Appliance Corp.:
Lamp Base Lock*, Dec 6 p 82

Waggaman, William H.:
Warns of Raw Materials Depletion; Submits National Plan, Oct 18 p 146

Walsh Press & Die Div.:
Punch Presses*, Dec 27 p 64

War Assets Corp.:
Canadian Government Received $34,173,000 for Surplus Disposal, Nov 8 p 120
Canadian War Plants Selling at Bargain Prices, Nov 15 p 96
Surplus Ships Sold, Nov 8 p 113

War Contracts:
Army Cancellation of Studebaker Contract Releases 5000 Workers, July 5 p 116
Contractors Granted Ten Day Delay in Canceling Ratings, July 19 p 105
Hinckley Says Termination Can Balance Cancellations During This Year, July 5 p 106
Navy Sets New Year's Day as Deadline for Clearing Contracts, Sept 13 p 84
War Dept. Contracts Being Let by Competitive Bidding, Sept 13 p 109
(See also Contract Termination)

War Dept.:
Army Appropriations for Fiscal Year 1946, July 5 p 84
Army Declares 252 Facilities Surplus, Sept 6 p 154; 194 Plants, Dec 13 p 119
Competitive Bids Return, Sept 20 p 119
Contracts Being Let by Competitive Bidding, Sept 13 p 109
Marshall Reports German Munitions Better Than Ours*, Oct 18 p 160

New Weapons Point to Stratospheric Warfare, Oct 11 p 103
Ready to Terminate Contracts Valued at $35 Billion, Aug 23 p 118
Slashes Procurement Program; 69 Plants to Stay in Standby Condition, Aug 23 p 119
Surplus Property Disposition Reported Paper Work Problem, Dec 13 p 144
Testing Laboratory for Combat Vehicles Planned, Oct 4 p 116
(See also Military Equipment; Ordnance)

War Labor Board:
(See National War Labor Board)

War Manpower Commission:
Allentown Plan Reversed, July 19 p 104
(See also Labor; Manpower)

War Metallurgy Committee:
Low-Temperature Behavior of Ferritic Steels*, Oct 4 p 69

War Production:
Component Cutbacks Proportionate to Recent Shell Cuts, July 12 p 91
Cuts on Shell Components and Containers to Release Some Sheet Steel, July 5 p 107
Extent of Military Cutbacks One of Prime Requisites for Successful Reconversion, July 5 p 84
General Somervell Reveals Miracles of Production and Management During War, Nov 1 p 76
How a Cutback Which Involves Substantial Release of Labor Is Handled, Chart, July 19 p 105
Multi-Billion Dollar Control Guide Revoked by Krug, Oct 11 p 102
Munitions Monthly Production in 1944 Equals $5 Billion, July 12 p 91
Navy Outranked as Steel User by U.S. Maritime Building, Sept 6 p 160
OES Approves Return of Ten Seized Plants, Sept 13 p 148
Wartime Expansion in U.S. Aluminum Capacity to Be 50 Pct Surplus, Nov 15 p 136

War Production Board:
Advisory Committees May Be Taken Over by Commerce Dept., Sept 20 p 92
Contract Cancellation Policy Restated, July 5 p 86
CMP Will Not Be Scrapped Before Dec 31, Aug 2 p 78
Critical Material List Revised, July 19 p 82
December Production to Hit 112 Pct According to Reconversion Report, Sept 6 p 123
Discontinued Reports, Sept 20 p 117
District Offices Closed as Needs Ebbs, Oct 11 p 132
First Refrigerators to Be Reserved for War Needs Stockpile, Aug 9 p 106
Four-Point Program Attempts to Combat Tight Flatrolled Situation, July 12 p 87
Freezes Third Quarter Mill Order Books on Some Sheet and Strip, July 12 p 87
Goes Out Nov. 3; Civilian Production Administration Created*, Oct 11 p 100
History to Be Written, Nov 15 p 86
Inventory Controls Altered to Prevent Buyers' Scrambles, Aug 30 p 84
Krug Meets Steel Executives, July 12 p 100
Krug Praises Labor's Participation in Solving Problems, Nov 8 p 110
Krug Reports Munitions Monthly Production in 1944 Equals $5 Billion, July 12 p 91
Krug Reports on Wartime Steel Production and Consumption, Oct 25 p 107
Krug Urges Prompt Cancellation of Bottleneck Items, Aug 23 p 116
L and M Orders to Be Revoked Aug 16 p 105
Lead Time Estimates Issued; Will Aid in Production Schedules, Nov 1 p 147
Metal Requirements Estimates for 1945, July 19 p 78
Multi-Billion Dollar Control Guide Revoked by Krug, Oct 11 p 102
Order to Remove Construction Controls, Revoked, Nov 8 p 146
Program to Increase Sheet and Strip Output to Face Tough Sledding; Manpower to Be Factor, July 19 p 80
Reconversion Grants Total 1120, July 12 p 130
Revocations, Aug 30 p 83; Sept 6 p 133
Spot Authorization Order Amended to Speed Civilian Production, July 12 p 106
Spot Check Cancelled Ratings, Aug 16 p 107
"Spot" Plan Ended, Aug 30 p 90
Steel Allocations to Get Further Paring, Aug 2 p 98
Steel Div. Executives Return to Civilian Positions, July 19 p 103
Steel Div. Resignations, July 26 p 114
Steel Div. Slashes Paper Work Required from Industry, Sept 20 p 117
Steel Div. to Close Down, Sept 13 p 82
Stop-Work Schedules for Steel and Other Materials, Aug 16 p 104B
Tells Fabricators to Limit Steel Needs, Nov 8 p 164
Theoretical Picture of Size of Reconversion and Progress, Aug 2 p 106
210 Industrial Controls Are Revoked; Others Under Board Review, Aug 23 p 108
Units to Further Aid Industrial Research, Planned, July 12 p 95
War Mobilization and Reconversion Act Program, Aug 16 p 104A
Warplant Expansion Concentrated in Area Occupied by Industry, July 26 p 126

Warehousing:
Buying Iron and Steel from Other Sources Authorized by OPA, Oct 25 p 80
Return on Galvanized Sheets Raised, Dec 6 p 123
Steel Deliveries in Third Quarter Small on Unrated Business, July 12 p 95
Steel Statistics Show Distribution of Products During War, Oct 4 p 126
Steel Stocks Reported Low, Dec 27 p 99
Surplus Warehouse Being Established at East Chicago, Aug 2 p 130
Tin Mill Products Corp. Starts Warehouse, July 26 p 112
Wardwell Warehouse Covers 92 Acres of Space for Surplus, Aug 2 p 112
Wire Mill Procedures Outlined, July 12 p 134

Waring, H. O., West, W., and Hodgson, C. C.:
Quality Control of High-Tensile Steel Castings*, Nov 29 p 52

Warner & Swasey Co.:
Broaching Hardened Involute Splines*, Aug 30 p 36P
Equipment for Sale, Dec 27 p 100
Makes New Five-Spindle Turret Lathe, Dec 20 p 141
Plans to Broaden Product Line, Sept 6 p 176
Production Work on Jig Borers*, Aug 23 p 72

Warren City Mfg. Co.:
Heads Farm Equipment Div. for Graham, July 12 p 90

Washington Steel Corp.:
Formed to Produce Stainless Sheet and Strip on Cluster Mill, Oct 18 p 101

Wassell Organization:
Charting Production with Peg Board, Produc-Trol*, Aug 9 p 66

Watkins Body Corp.:
Truck Body Plant Expands, July 12 p 92

Watson, T., and Hipperson, A. J.:
Flash Welding of Sheet Brass*, Sept 13 p 55

Waverly Petroleum Products Co.:
Pickling Agent, Troxide*, Sept 20 p 86

Weatherhead Co.:
Hydraulic Packing, Aug 16 p 77

Webb, W. R., and Work, H. K.:
Operation of 4-Ton Openhearth*, Aug 2 p 42

Wedell Tools, Inc.:
Triangular Tool Bit*, Dec 20 p 72

Weirton Steel Co.:
Fined for Priority Infraction, Nov 22 p 90
Installing Cold Reduction Mill, July 12 p 89

Weldability Factors for 18-8 Stainless, by F. H. Page, Jr., Dec 27 p 58

Welded Construction Reduces Die Cost by John Mikulak*, Oct 4 p 83

Welding:
Anti-fog for Welding Plates, American Optical Co., Oct 11 p 74
Anti-spatter Compound, Lincoln Electric Co., July 19 p 73
Burner Tip Reclaimer, Turco Products, Inc.*, Oct 11 p 74
Determining Surface Resistance of Aluminum for Welding*, Aug 16 p 74
Duplex Seam Welder, Progressive Welder Co.*, Oct 11 p 73
Field Repair Unit*, Oct 11 p 86
Fluxes for Magnesium, Nov 22 p 71
Ground Clamp, Will-Weld Mfg. Co., July 19 p 73
Hard Facing Metal, Fansteel Metallurgical Corp., July 19 p 73
Hydrogen and Oxygen Contents of Welds, Dec 20 p 59
"Insulating" Gloves, Graham-Paige Motors Corp.*, July 5 p 77
Magnetic Holddown Chucks Facilitate Plate Welding*, July 19 p 68
National Supply Assn. Organized, Dec 27 p 137
New Rod Permits Machinable Cast Iron Welds*, Nov 15 p 122
Positioner*, Aug 16 p 104B
Positioner, Standard Machinery Co., July 19 p 74
Power Take-Off, Lincoln Electric Co.*, Oct 11 p 74
Protective Jacket, Eastern Equipment Co.*, July 19 p 74
Repair Job Prevents Steel Mill Shutdown, Aug 23 p 69
Repair of Defective Gray-Iron Castings, Aug 9 p 74
Square Frame Welder, Harnischfeger Corp.*, Oct 11 p 73
Straight Edge, B & W Co., July 19 p 74
Straining of Weld Metal During Cooling*, Dec 20 p 48
Stud Welder, Nelson Specialty Welding Equipment Corp.*, July 19 p 72
Transformer Welder, Reduction Sales Co., Oct 11 p 72
Under-Water Cutting Torch, Chicago Tool & Engineering Co.*, Oct 11 p 73
Welded Ship Failures Traced*, Nov 29 p 49
Welders' Chipping Hammer, Chicago Mfg. & Distributing Co.*, July 19 p 74
Welders' Truck, Palmer-Shile Co.*, July 19 p 73
Welding Shield Cover Glasses, Industrial Products Co., July 19 p 74

Welding, Arc.:
AC Arc Welder, Ergolyte Mfg. Co., July 19 p 72
Copper Welding Electrode, Eutectic Welding Alloys Co., Oct 11 p 73
Electrode, General Electric Co., July 19 p 72
Electrodes, Allis-Chalmers Mfg. Co., July 19 p 72
Hidden-Arc Welding of 13-Gage Steel*, Nov 1 p 52
Lightweight Welder, Hobart Brothers Co.*, Oct 11 p 72
Locomotive Cylinders Fabricated by Welding*, July 5 p 60
New Electric Standards, Dec 20 p 76
Three-Step Attachment, Hobart Brothers Co., Oct 11 p 73
Twin-Arc System Improves Welding Efficiency*, Sept 27 p 58
Welded Construction Reduces Die Cost*, Oct 4 p 83

Welding, Butt:
Plate Edger Prepares Steel for Automatic Welding, Nov 8 p 146

Welding, Flash:
Alloy-Steel Rings*, Aug 16 p 50
Sheet Brass*, Sept 13 p 55

Welding, Gas:
Emergency Welding of Magnesium Parts, Dec 6 p 65
Weldability Factors for 18-8 Stainless, Dec 27 p 58

Welding, Pressure:
Gas and Oil Pipelines to Be Fabricated by Pressure Welding, Oct 4 p 100

Welding, Resistance:
Current-Force Recorder, General Electric Co.*, Oct 11 p 74

Welding, Spot:
Dual Welder, Progressive Welder Co., Oct 11 p 73
Electrical Characteristics of Spot Welding Machines*, Oct 25 p 59
Galvanized Steel*, Nov 15 p 64
Heat Treating, Forming and Welding 75S Alclad*, (2 Parts) Dec 6 p 66; Dec 13 p 67
Midget Welder, Interstate Machinery Co., Inc.*, Oct 11 p 73
Precision Welder, Precision Welder & Machine Co.*, Oct 11 p 71
Tweezers, New Jersey Jewelers' Supply*, Oct 11 p 74
Wire Cable Welder, Thomson-Gibb Electric Welding Co.*, Oct 11 p 72

Wells, Martin:
Electrode Holder*, July 19 p 74
High Pressure Pump*, Dec 6 p 84

West, J. B.:
Hot Forming Magnesium Alloy Sheet*, Aug 16 p 56

West, W., Hodgson, C. C., and Waring, H. O.:
Quality Control of High-Tensile Steel Castings*, Nov 29 p 52

Western Electric Co.:
Leases Studebaker Aero Engine Plant, Sept 27 p 97

Western Gear Works:
Brazing of Heat-Treated Parts*, Aug 16 p 54

Western Pipe & Steel Co.:
Purchased by Consolidated Steel Corp., Oct 4 p 98

Western States Council:
Norris Decries Loose Talk on West Coast Steel Situation, Nov 8 p 102
Norris Suggests Boycotting Eastern Steel Interests, Aug 30 p 66
Steel Committee Calls for Competitive Sealed Bids on Geneva, Nov 8 p 94

Westinghouse Appliance Div.:
Roller Attachment for Shear Prevents Scratches*, Aug 23 p 63

Westinghouse Electric Corp.:
Adjustable-Range Force-Measuring Spring*, Sept 20 p 63
All-Position Electrode, July 19 p 72
Buys Curtiss-Wright Plant at Buffalo, Dec 13 p 115
Coined Grooves for Shaft Journals*, Nov 8 p 81
Electric Heaters for Domestic Consumption to Be Made, Nov 29 p 134
Flexible Infra-Red Drying Installation*, Aug 2 p 63
Income to May Drops 11 Pct, July 12 p 122
Jet Engines Promised Outsiders, July 12 p 98
Mansfield Expansion Planned, Aug 9 p 106

Motor Div. Removal Contemplated, Oct 25 p 104
Postwar Plans Are Detailed by A. W. Robertson, Aug 23 p 121
Refrigerator Output Started, July 19 p 105
Ship Propulsion Contracts Slashed $12 Million, Sept 13 p 88

White Motor Co.:
Expansion Announced, Nov 1 p 74

Wickwire Spencer Steel Co.:
Merger Plan With Colorado Fuel & Iron Submitted, July 12 p 126

Wiegand, Edwin L., Co.:
Electric Immersion Heaters*, Aug 23 p 83

Wilcox-Rich Div.:
Eatonite, New Valve Facing Alloy*, Oct 25 p 58

Wildman Mfg. Co.:
USWA Contract Guarantees Annual Wage, Aug 2 p 101

Will-Weld Mfg. Co.:
Ground Clamp, July 19 p 73

Williams, A. J., and Corbett, R. B.:
Effects of Boron in Steel, Oct 11 p 54

Williams, H. G.:
Heat Treating Beryllium Copper for Peak Performance*, Dec 6 p 58

Wills, W. H.:
Selection of Die Steels for Cold Work*, Nov 22 p 58

Willson Products, Inc.:
Safety Spectacles*, Aug 16 p 78

Willys-Overland Motors, Inc.:
Postwar Jeep, a Jack-of-All-Trades*, July 19 p 76

Wilson Products, Inc.:
Plastic Eyeshield, Sept 13 p 75

Winslow Engineering Co.:
Magnetic Strainer*, Aug 30 p 56

Wire:
Alloy Finish, Johnson Steel & Wire Co., Inc., Dec 13 p 79
Cable Welder, Thomson-Gibb Electric Welding Co.*, Oct 11 p 72
Fencing May Prove Useful for Grain Storage Bins*, Aug 2 p 107
New Steel Cables Increase Plane Maneuverability, Sept 20 p 159
Phelps Dodge Builds Midwestern Mill, Sept 13 p 146
Price Changes by OPA, Oct 25 p 110
Price Spread on Wire and Keg Nails Issued, July 5 p 105
Stainless Steel at American Steel & Wire's Waukegan Works, Dec 27 p 92
Surplus Barbed Wire Price, Dec 6 p 109
Warehouse Procedures Outlined, July 12 p 134
Wire Products and Template Prices Drop in Iberian Peninsula, Sept 20 p 115

Wisconsin Motor Corp.:
Major Expansion Planned, Oct 4 p 115

Wolf, K. J. B.:
Early Aluminum Alloys*, Dec 27 p 51

Woodall Industries, Inc.:
Buys Fabricating Firms, Nov 22 p 112

Woods, Robert C., and Fua, Frederic:
Continuous Gaging With X Ray Micrometer*, Nov 29 p 50

Wooton, Paul:
Joins The Iron Age*, Nov 22 p 117

Work, H. K., and Webb, W. R.:
Operation of 4-Ton Openhearth*, Aug 2 p 42

Work Incentives:
System Dropped by Storms Drop Forging Co., Sept 27 p 93

Wright Aeronautical Corp.:
Workers Get 30 Pct Wage Increase, Oct 18 p 103

X

X Ray:
Micrometer for Continuous Gaging*, Nov 29 p 50
Million Volt Betraton Opens Possibilities in Penetration, Nov 22 p 153
Standards for Purchasing Castings*, Nov 22 p 62

X Ray Standards for Purchasing Castings, by L. W. Ball*, Nov 22 p 62

Y

Yarco Distributors:
Cable Connector, Oct 18 p 73
Electrode Holder*, Oct 11 p 71

Youngstown Sheet & Tube Co.:
Construction Plan Covers Finishing Units, Sept 27 p 96
Earnings, Third Quarter, Nov 15 p 154
Expands Cold Mill, Nov 8 p 105
Wage Raise Rejected; Discusses Employer-Employee Relations, Nov 1 p 97

Z

Z-Metals Research Institute:
Formed, Nov 1 p 134

Zagar Tool, Inc.:
Blank Collets*, Sept 6 p 99
Broaching Machine*, Aug 9 p 78; Nov 29 p 67

Zeigler, Paul P., Householder, L. E., and Logsdon, H. N.:
Aluminum—Alloy R303*, Oct 4 p 74

Zimmerman, Dr. R. E.:
Cites Growing Use of Numerous Fine Steels in Varied Industries*, Nov 22 p 142

Zinc:
Ample Supply, Sept 20 p 166
Estimated Supply Will Not Meet Needs, July 5 p 142
Shipments Decline, Oct 18 p 112
Shipments Increase, Dec 27 p 102
Stocks Gain, Aug 2 p 134
Supply, July, Aug 16 p 152
Unfilled Orders Drop Sharply in August, Sept 13 p 152
WPB Reports Stocks, Sept 20 p 94

Zurn, J. A., Mfg. Co.:
Pipeline Strainer*, Nov 8 p 84
Safety Vents*, Dec 6 p 81
Strainer Sleeve*, Dec 6 p 81

LIBRARY
WEST VIRGINIA UNIVERSITY